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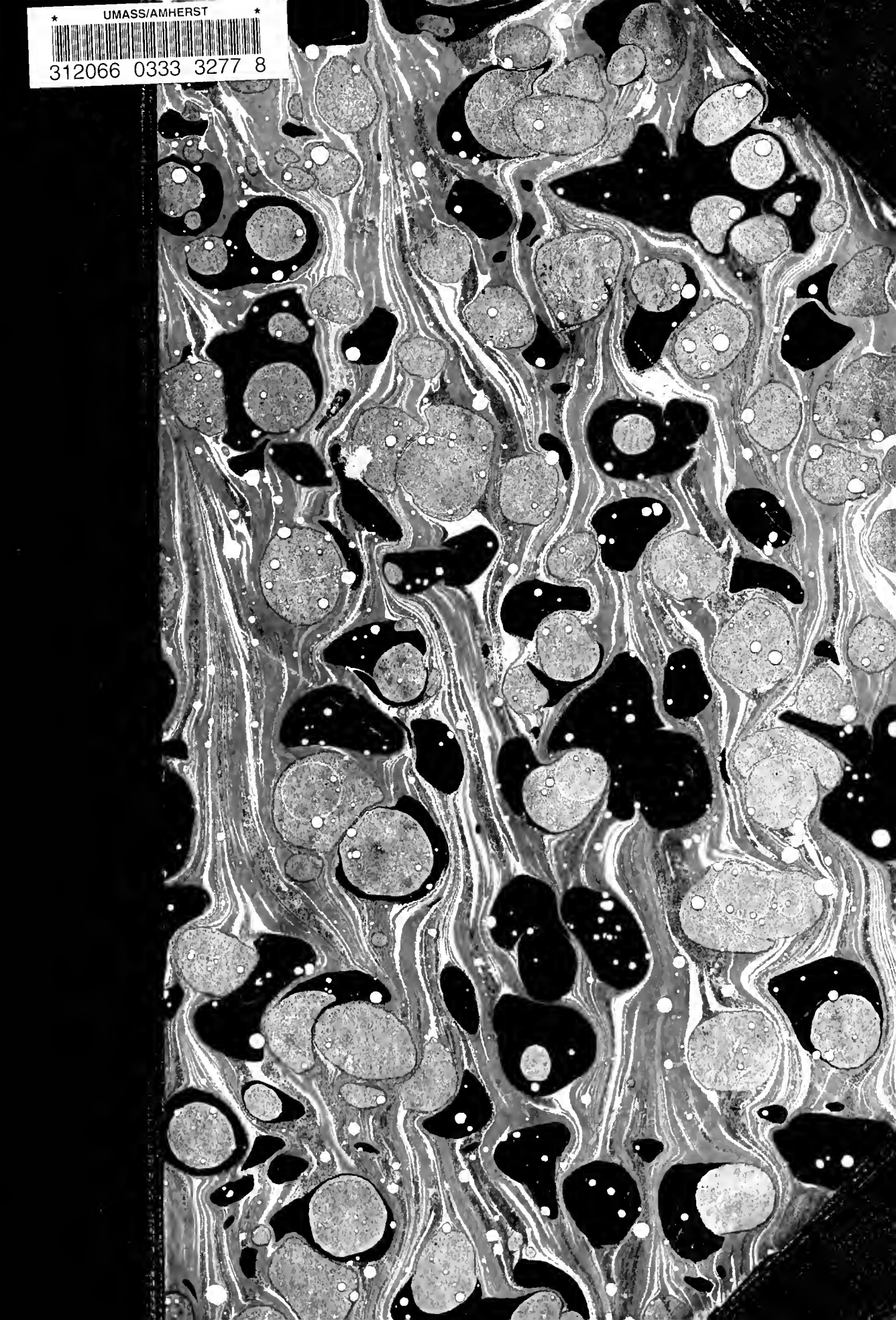

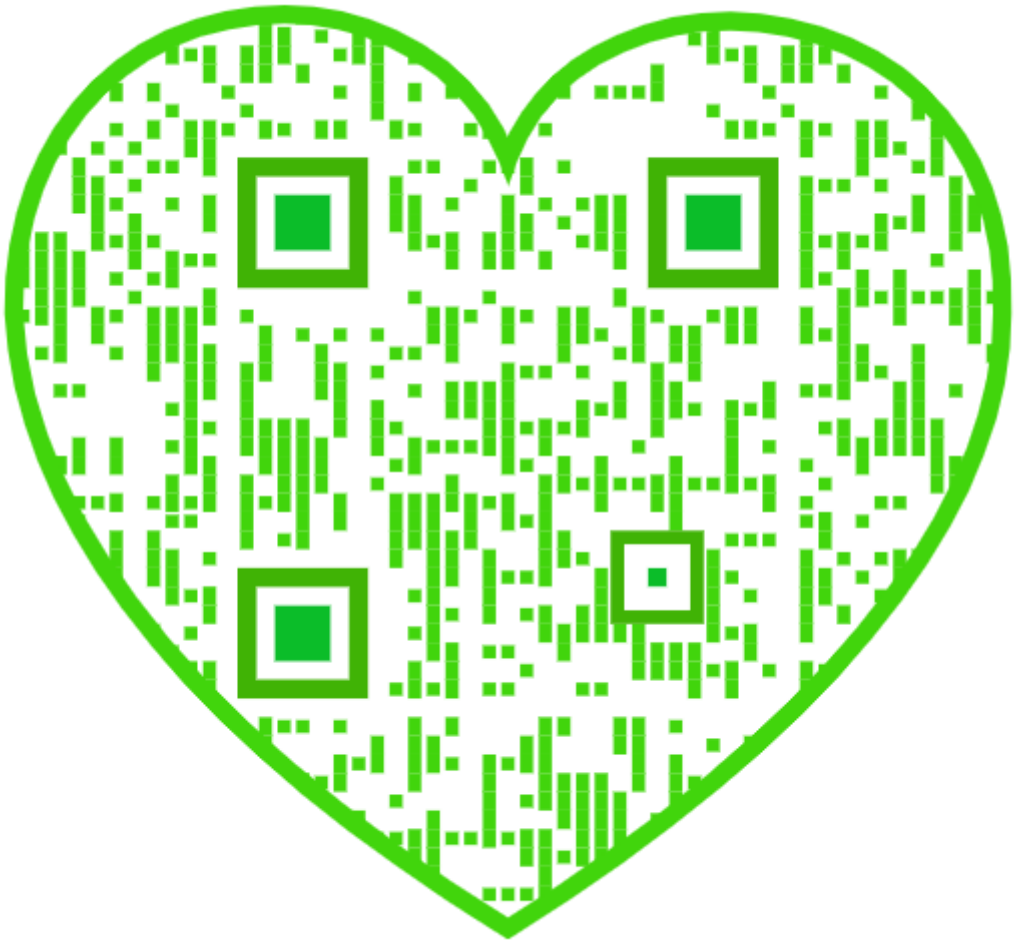

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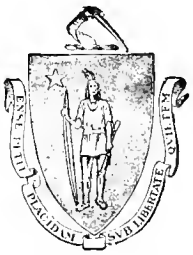
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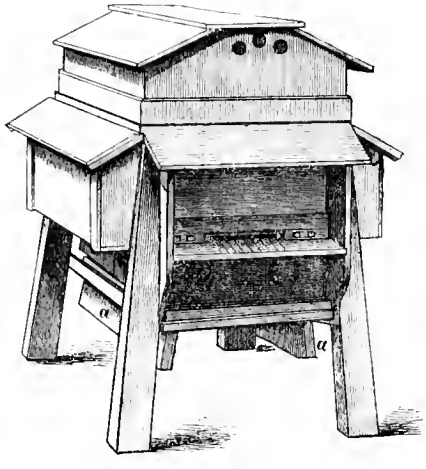

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THE

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Editorial, Notices, &c.

MAY.

The unusually fine weather of the past two months leads us to hope the month of May will be indeed a merry one for advanced apiarians. It has seldom been our privilege to record so excellent a season as this hitherto of 1880, and we most heartily hope and trust that it is the happy harbinger of a splendid year. Gratitude has been cynically defined as a season of favours to come, but in common with all bee-culturists we have every reason to be deeply grateful for the delightful time that has been vouchsafed to us, for, whether in regard to the health and well-being of humans or bees, we say with thankfulness that it has been all that could be desired. There is an old saying that 'March winds and April showers bring forth May flowers,' and truly the prospect is a charming one. For bees, in the hands of those who have cared for them the past few weeks have been most precious, enabling them to recover strength after a protracted time of trial, and to renew their populations almost without let or hindrance; and now, writing from our own experience, they are *fit* for *anything*, and a genial summer will show what bees in careful hands are capable of doing. With every known appliance at hand, or easily to be obtained, price being now, in its most favourable sense, 'no object,' the skilled apiarian will prove the inestimable advantage of the modern system of bee-management as compared with that of letting them alone. Accidents will happen in the best-regulated apiaries, and in most there will naturally be losses; few indeed after such times as ruled of late will have come scatheless out of the ordeal through which they have passed, but while the advanced culturist can afford to smile over his two or three per cent losses, the 'let-alones' are grieving over the total destruction of their bees, many having not a remnant left alive. The latter is a sorry picture, and not a source of pleasing contemplation to those who have railed at improved methods of bee-keeping, denounced modern appliances, and scouted the teaching that has been promulgated in this *Journal*.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

Beginning.—That is exactly what we are doing, we are beginning a new volume of the *Bee Journal*, and we hope that every one who hears of it will begin bee-keeping under its guidance, and act up to the principles it expounds. There be many who have lost all their bees, which could not have happened except as a catastrophe had they followed its dictates. A few there are who having neglected the first duty of paying their subscription could not be expected to adhere very strictly to other important suggestions, and they have suffered proportionately; and there are a vast number who with the *Journal* for their guide have avoided all the rocks and quicksands on which the hopes of others have been wrecked, and though often in troubled water have come safely out of it, and are eager for fresh enterprises. To the 'many' we would say, Take passage with us, our ship is well found, our lieutenants are all volunteers who love the service and are most obliging to passengers, and the captain commanding, owner also, is ever on the alert, anxious for the safety of the craft and the well-being of all connected with it. To 'the few' as would say 'it's never too late to mend,' and 'better late than never,' Sign fresh articles, clear off old reckonings, and begin anew; and to the vast number, including all our able volunteers, we tender our best thanks for their substantial help

in the past, and for the many evidences of confidence with which they have favoured us; help and confidence we invite them to renew with a full assurance that no efforts shall be spared on our part to make the voyage through Volume Eight in the season 1880 an unexampled success. This lengthy 'order of the day' has almost crippled our speaking-trumpet, but we hope it is not too long to be agreeable.

Starting with Bees.—In beginning we have always recommended that swarms should be obtained in preference to stocks, and that new hives should be used in preference to old ones, so that perfect healthiness may be assured. Amateurs are often tempted to buy stocks in the expectation that in a few weeks they will get swarms from them; but it frequently happens that, through disease, bad weather, or want of sufficient knowledge of bee-management on the owner's part during the critical months preceding the swarming time, they (the stocks) dwindle instead of increase, and remain profitless during the summer, causing disappointment and disgust.

Old Hives.—Many who will begin again this season through having lost their bees in the past, will be tempted to put their newly purchased swarms into their old hives of comb; but now that comb-foundation can be so readily obtained, we strongly urge them to cut out the old combs and melt them up, and thus destroy the probability of their communicating disease, or propagating wax-moth, the germs of both of which they often contain. Old hives and frames should be thoroughly cleaned, all the propolis being scraped off, and they should be boiled, or scrubbed in boiling water, disinfected, re-washed, and dried, and their covers should be repainted. It would be well to take old hives to pieces if it be possible to do so, and cleanse all the parts separately, replaning the inside and painting the parts that join together so that all suspicion of disease or vermin may be removed. Those that are furnished with zinc runners should have the zinc removed, for that metal being very expansive, through heat, is liable to buckle and permit a deposit of propolis and dirt between it and the wood which it is not easy to remove without actual scraping.

Melting Old Combs.—This is often a source of considerable trouble and vexation, but it is easy to perform. Make a bag of cheese-cloth and put all the combs into it, put in also sufficient weighty material to keep it under water when immersed. Take a garden sieve and lay it in the bottom of a copper or large iron boiler, set the bag of comb in it, weighty end downward, and fill up with water until the bag is covered. Boil up quickly, kneading the bag with a crutch-shaped stick or a hairless broom-head, to cause the separation of the comb-cells, and when done, let out the fire and leave the whole till cold. This work should be done at night to prevent the bees being attracted by the odour of the boiling wax, &c. The sieve will prevent the bag from burning; the wax will float on the top of the water, and next morning may be removed in a cake to be afterwards reboiled, clarified, and cast into any shape required. Old combs are a fruitful source of mischief in an apiary, and should never be allowed to lie about: if not worth melting up, it is better to burn, or bury them.

New Hives.—These can now be had at almost any price, but it would be wise in all cases for beginners to adopt some form of the moveable comb hive. We have every respect for the skep, box, and tree trunk, as ancient institutions, and because from them we can learn the natural condition of a bee-nest, but for the purposes of *bee-culture* we strongly deprecate their use. It is sometimes argued that a cottager cannot understand the use of a frame-hive; that a simple skep or a plain box is all that he requires, and that, when he has learned to prefer the supering to the sulphuring system of honey-getting, he can be gradually taught to use the more advanced hive. We, however, would most strongly advise that the skep should be abandoned, and that boxes only should be recommended and used, and that they (the latter) should be furnished with frames, so that when the combs are built they may be moveable.

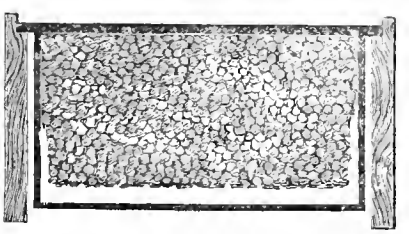
This, of course, is a recommendation of the modern hive, and the fear that the cottager cannot understand its uses is, we venture to suggest, but a poor argument against our position. Whatever a cottager can do with a skep or simple box hive, he can do equally well with a frame hive. The frames being inside, out of his sight, need not disturb his mind in the slightest degree; he may imagine, if he pleases, that they are not there, and that his bees are in a simple box, with large top hole for feeding and supering purposes, and he can proceed exactly as with a skep, but will have the advantage over the latter of a smooth flat top on which he can place his supers, without the necessity for the cost and labour of providing and fixing an adapting-board. The frames will be no hindrance to him or to his bees, but, if properly made, and fitted with foundation, their use will be helpful to the latter, and by hastening the production of comb, procure for the cottager the earlier completion of his supers.

An objection may be urged that the introduction of frames to the box will add to the expense of the hive, but that is valid only in degree, and does not affect the question of their extreme desirability; and bearing in mind that, though it is the chief obstacle in the way of

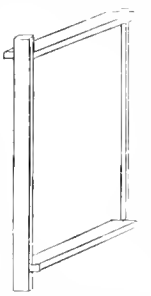
improvement, the use of frames in hives is essentially the key to improved bee-culture, and we take it to be the duty of those interested in promoting the art to spare no pains in advocating them, and overcoming difficulties in the way of their adoption.

Cheap Frame-hives.—Nothing is more absolutely necessary to the promotion of bee-culture as a popular pursuit than the production of cheap hives, yet there is no branch of the business which is more neglected Mr. Hunter made allusion to this subject in his reading at the Conversazione on the 14th ult., when 'teaching the cottager to make his own' was a subject of considerable interest, in which several took part. It transpired that an amateur made his own hive for little more than the cost of the wood and the nails. He just cut out 'this' with a circular saw, and turned 'that' in his lathe, and thus everything being accurate, he succeeded admirably. But cottagers and amateurs in general have no such appliances; a saw, a hammer, and a knife are about all the tools a cottager can command, and with these he ought to be able to make a hive as good as any domicile the bees usually select for themselves, and therefore one that ought to be good enough as far as they are concerned. Mr. Hunter thinks that associations should stick more closely to the interests of the cottager class of bee-keepers, and gave some excellent suggestions on the formation of hives from the boxes in common use as packing-cases, and comparatively valueless for other purposes. There is, however, the difficulty almost insuperable to 'knife carpenters' of making the frames of accurate shape and dimensions, and many amateurs, with better appliances find here a stumbling-block, and practically find it cheaper and better to purchase the frames ready made, and avoid the disagreeables arising from ill-made home-spun work.

Making Frames. — Those who intend to utilise boxes of any pattern easily obtainable to make into hives, will bear in mind that the relative dimensions of the frames to be put into them are very important. It ought to be thoroughly understood that their (the frames) internal dimensions are no



guide, as differences in the thickness of the material of which they are made will spoil the relation of frame to hive. The size of the box governs that of the frame measuring outside the latter, and the space between them should be as nearly a quarter of an inch as it can be made, that being sufficient for the passage of a bee. It may be well to state as a reason for this particular dimension, that any cranny, crack, slot, or crevice, into or through which a bee cannot easily pass will be almost surely stopped with propolis apparently to prevent the lodgment of vermin within them, while any larger space the bees will fill with comb as soon as their hive becomes crowded. The distance of frames from each other when in the hive is not the governing principle in their arrangement, nor is their individual width of very great importance; but it is essential that they shall be not more than an inch and a half from centre to centre of each other, and not less than one and nine twentieths, the difference, one tenth of an inch being within the margin of bee-deviation. Frames are usually made about an inch in width, the top bars near half an inch in thickness, the ends three eighths, and the bottoms a quarter, or less. In the March *Journal* allusion was made to the American frames we had seen in the hives sent over by Mr. Nellis in which the frame-ends are somewhat similar in construction to those exhibited in a hive we showed at the Alexandra Palace in 1876, and we venture to illustrate the improvement we believe will make the same perfect. It will be obvious that frames with ends wider on both sides than the combs are, will not lie comfortably on the flat wire frame of an extractor, which is a serious drawback to their efficiency. Extractors can of course be provided to suit such frames, but they would probably not be equally suitable for *all* frames, and therefore we think it equally reasonable to

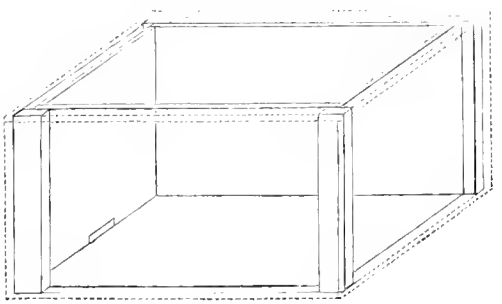


make the frames so that they will sit conveniently in ordinary extractors. Instead therefore of widening the frame-ends on each side we suggested that they be widened on one side only at each end as shown in wood-cut, so that the widened part can rest on the top edge of the extractor cage, and the comb lie flat upon the wire-work. Such frames would of themselves form a hive on the Italian (Giotto) principle, and would need only floor-board, back, front, and quilt to render it useful as a 'Make-shift hive.'

Purchasing Frames.—Purchasers of frame, are naturally anxious to have them completes correct in shape, and with wax-guides affixed; but in this state they require a box, into which they will fit, to preserve them from damage on the journey; and we always advise that such box shall be ordered to be correctly made of the dimensions of a hive, so that in emergency

it can be used as a 'Makeshift,' instead of being useless and not worth returning. Such a box and frames can be had for four shillings and sixpence, and is easily convertible, by the addition of floor-board and cover, to an excellent hive. As a nucleus and pattern for intending hive-makers it is invaluable. Frames can be bought in pieces, but in that condition the guides are liable to be broken. They, however, pack in very small compass, and the cost of carriage is thereby reduced.

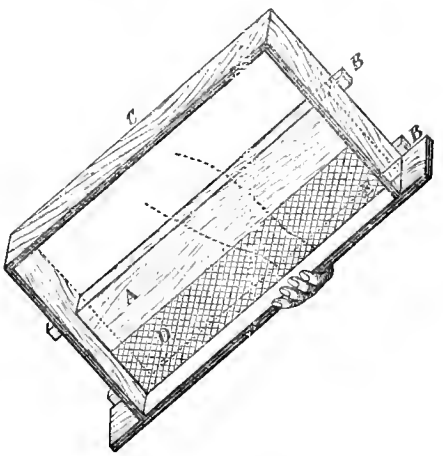
Improving Makeshift Hives.—Makeshift hives are not generally very kindly mentioned by those whose interest is better served by selling more expensive wares. A letter from a reverend correspondent in Nottinghamshire, whose queries are published on page 23, gives such encouraging testimony in their favour, and we have so many other evidences to the same effect, that we shall continue to make, use, and vend them. Some persons object to their being unplaned, but such we would refer to a letter of an old and able bee-master (Mr. Geo. Fox of Kingsbridge, Devon), whose pen is at present far too silent for the interests of bee-culture. He says, on p. 136, Vol. II. *B. B. J.*, and the letter is well worthy of re-perusal, 'I would here just state that the delightfully rough condition, externally and internally, frames and all, in which some boxes are sent out, instead of being carefully planed, is quite a treat to the bees.' Those, however, who wish to improve such hives by increasing the protective character of their walls, may easily do so without greatly increasing their cost, as may be gathered from the illustration. We have here depicted a



simple box, like an ordinary hive when the frames are removed, and supposing it to represent a Woodbury hive in size. If four pieces of wood, each 8¾ inches long, 2 inches wide, and 1 inch thick, be nailed to the corners as shown, four pieces of thin board can easily be nailed around the hive, making it double-walled, with air-spaces between, which latter can be closed with slats at top and bottom, or filled with shavings, sawdust, or chaff, as may be preferred. Such a hive will then be equal (for bee-comfort) to the highest-priced hive in the land, always supposing thickness of wall to be a desideratum.

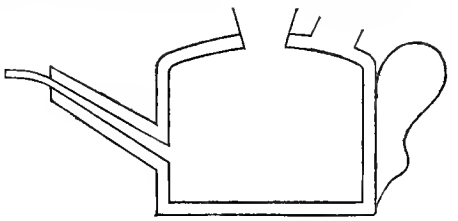
Fixing Guides and Foundation.—Having hives and frames, the mode of fixing the guides needs explanation, as it is to many a puzzling process. A simple guide of plain wax-sheet is very easily made and fixed, and requires very little preparation. Supposing the frame to be of Woodbury size, the under surface of the top bar will be about 13 inches long between the frame-ends, and, say, 1 inch wide; and the guide will be required along its centre. Get a piece of wood about an inch wide, ¾ inch thick, and 14 to 15 inches long; cut a corner out of each end, and shave off the front bottom edge, as shown in the woodcut, leaving the front part of a length

to go into the frame and of a width to bring its face where the line of wax is to be. Lay it in cold water to soak while the wax is melting (a glue-pot is the best melting-pot), and then, with the frame in the left hand, its wet front face on the under surface of the frame-bar, where the wax-guide is to be formed. Apply the hot wax with a brush all along both the



piece of wood and the frame-bar, giving one or more coats according to the thickness the guide is required to be. When it has 'set,' the piece of wood will come away and leave a clean guide of plain wax-sheet, which will ensure straight combs in the hive if the frames be properly arranged. The secret of success is having a wet piece of wood, a dry frame-bar, boiling wax, and a clean brush. This method is a modification of Mr. Cheshire's plan of making and fixing foundations by using plaster casts. For fixing comb-foundation in frames a wider

wooden arrangement is needed. We use a piece of board *A* with two strips *EE* nailed along the back of it projecting both ways. The frame is laid against the wood as shown in woodcut, the foundation *D* laid in its place, and molten wax run along the junction of frame-bar and foundation. If the latter is more than an inch wide, wax is afterwards poured along its other side, and, provided the frame-bar be quite dry, and the wax quite hot, it will not be likely to give way or flake off. The best apparatus for applying the boiling wax in this case is Abbott's smelter—a spouted boiler on the glue-pot prin-



ciple, in which the wax is kept at boiling heat until it is poured out at the fine spout. The inner vessel is for wax, the outer for water; and the whole being of copper will last a lifetime, if not allowed to burn itself out through getting dry.

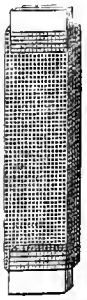
Swarming and Hiving. — The glorious weather of spring which has given surviving bees so good a start after the long bad winter, will insure early swarming; and probably ere this reaches our readers, the first natural swarm will have issued, and its advent have been duly chronicled; but there will be many to come in this merry month, and we hope they will be well cared for. When a natural swarm issues they will have with them in their stomachs (honey-sacs) sufficient honey to enable them to live for two or three days, and for the first day or two will require no feeding; but after that time they should be fed on every day during which they have not been able to gather freely from natural sources. The first requirement of a swarm is worker-comb, in which the queen may deposit eggs to be developed into young worker bees; and so long as the honey-supply is moderate they will build worker-comb only: but if large quantities of honey are at hand, or if syrup be supplied to them too abundantly they will build drone-comb to store it in, which they appear to do on the principle that it is easier and less wasteful to build large cells than small ones; but afterwards when those store cells are used for breeding purposes, every egg deposited in them will, if permitted to mature, become a drone bee. On the other hand, if through unkind weather the out-door supply of food is stopped and syrup is withheld, the building of comb will be discontinued, breeding will flag, and the prosperity of the swarm will be greatly hindered. Combs are formed by the bees out of wax which they make by digesting honey in their bodies; and this, the first duty of swarms, they will continue to do until they have made as many combs as they can occupy, provided they can get the honey with which to form the wax to make them. Swarms have what is called the 'comb-building impulse;' but a cessation of the honey supply destroys it, and when a swarm has once ceased to build, the bees will not recommence until a later supply necessitates room for storing it, and then they will build drone cells as before stated. Heavy, indiscriminate feeding of swarms is therefore not to be commended; it may make wealthy hives, but they will be achieved at the cost of a working population, and the production of a lazy one, and such a hive will never do well thereafter. When a first swarm issues from a hive, it whirls about in the air for a time and settles in a cluster, usually on a bush or tree, and awaits the coming of the queen. When she has joined it, which may be known by the bees having quietly collected, it is fit for hiving. If, however, from any cause the queen does not join the swarm, the bees separate apparently to search for her, and if they find her they join her; but should they not succeed in discovering her, they will return to the hive, to swarm again on another occasion. When the bees do not find their queen, it is usually because through infirmity of wing she has fallen to the ground; and a careful search will generally be rewarded by her discovery, usually with three or four bees attending her, a sorry picture of fallen greatness. If she be now put into an empty hive, and the latter be set in the place of the full one which may be put upon another stand, the bees will gradually join her, and all will be well. Should the bees, however, find her while looking for her, and join her on the ground, the hive may be set over them, and they will go up and cluster in it. We will, however, suppose that the queen joined the swarm on the tree as first suggested, in which case hiving cannot be too quickly performed. Having their queen with them, if they be not soon hived, they will look out for a home for themselves, and scouts having been sent forth to find a suitable place, they will presently decamp and take possession of such as may be found.

This is, however, not an invariable rule; sometimes from not finding a home, or through a change of weather, the cluster, if not hived, will continue in the bush until they have formed wax and commenced comb-building, in which case they will stay for days unless found and hived, or till they perish through adverse weather, and dwindle ere they have time to bring forth young bees to replenish their numbers.

Artificial swarming and hiving are fully described in leaflets sold at a halfpenny each, and the limit of space forbids repetition here.* Nevertheless, as some doubt exists as to the mode of hiving in hives with legs, we would say that having made all 'ready,' we turn back the quilt and remove two or three frames from the hive's side, then catching the swarm in a skep or pail, we carry it to the hive and pour in the bees. They immediately run under the covered frames and commence fanning at the entrance, while we gently return the frames, restore the quilt to its correct position, and cover up the hive to keep out the sun's rays. The fanning and buzzing at the entrance, or, as we are much more inclined to believe, *the odour thereby driven forth from the swarm* (of which we shall take an early opportunity to write more), will be sufficiently attractive to straggling bees to induce them to join the latter, and nothing more (as a rule) need be done unless the weather be hot and more ventilation be needed, which may be given by lowering the floor-board, or sliding it forward and leaving a space between it and the hive at the back. When swarms pitch at a distance from the hive intended to receive them, they can be caught in a skep or pail and left until evening, when the above operation can be performed with safety.

Uniting Queens.—This is one of the ticklish operations upon the method of performing which there is great difference of opinion, and about which much that is nonsensical, the result of immature observation, has been written. Why bees will *sometimes* accept a queen and at others refuse her, or why they will persistently refuse one queen and presently accept another, almost without care on the part of the operator, the apparent conditions being the same, are puzzles we will not now enter upon; our object being to show the amateur how to avoid the various causes of failures, or rather to afford him the means of overcoming them, so far as they are known and understood. Very large experience has proved beyond a doubt that in hives in which there is hatching brood, and, consequently, young bees, queens may with safety be entrusted to their care in the honeyless cage, *i.e.* a cage unconnected with the cells in which honey is stored, whereas in hives that contain no brood, and the bees are presumably 'aged,' it is not safe to confine them without provision.

In hives in which young bees abound, as indicated, a cage made of zinc, in the form of a tube, three or four inches long, $\frac{3}{4}$ in. wide, and $\frac{1}{4}$ in. thick(inside), with a plug in each end, is all that is necessary. The reigning sovereign having been removed, the new queen is put alone into the cage, which is fixed on a comb amongst the brood by thrusting a hairpin through the perforations in the cage. The hive is then closed, and after forty-eight hours the queen may be released. By having a hole made through the plug in the upper end of the cage, a wire may be pushed down to thrust out the plug from the lower end; and by this arrangement the queen may be released at any moment without disturbance to the hive, on the principle strongly advocated by 'A Renfrewshire Bee-keeper,' Rev. George Raynor, and Mr. W. Carr.



On another page will be found a method of substituting queens without a cage by John Enock, and we have every faith in his report; but we find the chief difficulty in this branch of bee-culture to arise from its often being necessary to re-queen queenless stocks, the bees of which are generally 'aged' before their condition is discovered. Under these conditions the bees seem to have lost all sense of moral rectitude, if we may judge by their actions, for they encase, maul, sting, starve, or dismember, as may happen, the mother-in-law sought to be imposed on them. Being aged, and out of their apprenticeship as nurses, bees seem to lose the instinct which prompts to increase their species: they are old and testy, and evidently do not want to be bothered with a new mamma, with babies to follow, so they 'set up their backs' and oppose her introduction to the family. There have been thousands of failures in the attempts to introduce alien queens to aged bees, and it is often a comparatively useless task, though accepted, for old bees do not care (or are not competent) to be nurses to their brood, and though they be ever so numerous, breeding will go on very slowly indeed, until young bees begin to come forth. This fact often procures an ill report for Ligurian queens (they are frequently introduced under these circumstances), and the great expectations with which they were united are disappointed, through the queens having been imposed on demoralised populations.

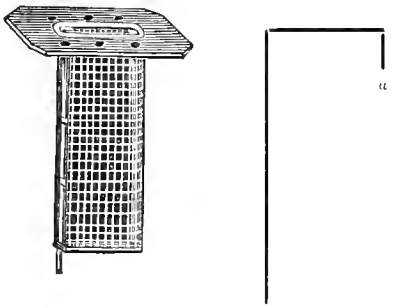
In uniting queens the essential element, thoroughly recognised in the principle advocated by the clever bee-masters named, is quietness, *i.e.* non-disturbance of the hive and bees when the queen is to be united. Caging on a comb in a pipe-cover or thimble-cage creates disturbance as a matter of course, on seating the queen alone in a honeyless cage, and insures (amongst old bees) her starvation. If a few of her own bees be put in the cage with her they will yield up to her the last drop from

* Leaflets are sixpence per dozen, post free, or assorted at a halfpenny each, and a halfpenny for postage at this office, Southall, London.

their honey-sacs, and die within forty-eight hours, while she will be left alone to starve, or, if set at liberty, to be destroyed. Next to queenless old bees those that, having a queen, have been long broodless, are the most difficult with which to unite an alien queen, and may be dealt with as if queenless.

Experience has shown, however, that notwithstanding the seeming antipathy of old bees to queens, if the latter are kept engaged, or within 'speaking distance' of the former, for a few days, the latter will forget their antagonism, and union may be quietly effected. The old fashion of using the boxes in which queens are imported as cages is effectual with old bees, but there is a risk that the dysenteric odours therein consequent on the confinement of the bees during their journey may have an evil effect. The method consisted in replacing the wooden bottom of the box with one of perforated zinc, and placing it with its contents on the hive over the feed-hole. The odour from below would thus impregnate the bees and queen, and in due time, the zinc being withdrawn, the union would take place. It is always better, if possible, to avoid the chance of infection from dysenteric odours by presenting the queen and her attendants without their imported surroundings, in the actual bee-nest where she cannot suffer from cold, as otherwise might be the case, and in such a way that she shall be secure from liability to starvation. To do this we have simplified our queen-cage, and in lieu of the upper plate of perforated zinc or vulcanite have introduced a wire bar that acts as a gate across the opening at the top, and think it is as perfect as a cage can be for the purpose. It now contains all the best principles of all others. To introduce a queen to a queenless colony, the position of the bee-nest must be ascertained, and a 'feed-hole' cut in the quilt above it. The cage is then thrust down between the combs amongst the bees, and if there be time, ere the queen arrives it may be filled with crumbs of barley sugar, which the bees will consume. When emptied by them, the queen and a dozen or so of her bees should be put into it, and the bar laid lengthways across the opening; a bottle of scented syrup tied over with canvas should be kept over the cage during the incarceration, and after a few days by withdrawing the wire the union will be quietly effected.

The bar is a continuation of the moveable wire running down the side of the cage, and is formed thus:—the point *a* locking into a hole in the top plate, securing the bees and a queen, yet permitting access to the feed-bottle. Two or three holes may be made in the top plate around the cage to permit the bees of the hive partaking of the syrup, an amusement for them that will cause the hive to acquire the odour of the syrup, and ensure cordial fraternization



with the queen and bees introduced. This cage has been well tried, and can be used under all conditions of queen-introduction and barley-sugar stimulation.

Change of Weather. — Although March and April have been so exceedingly fine, it should be remembered that there is usually a fortnight at the least of miserable bee-weather during May, and when not recognised and provided against the bees suffer heavily. When breeding extensively, as they now are, a sudden return of cold weather and the consequent prevention of honey gathering stops the deposition of eggs, and often causes the bees to consume or destroy the larvæ and white nymphs which they throw out of their hive. Feeding, and the partial closing of the hive entrances, will help to counteract the evil, and, therefore, careful attention should be given. With the prospect of a change in view, we ask all bee-keepers not to be hasty in making artificial swarms, or doing anything in which lowness of temperature is inimical to success.

SUPERING.

When shall we put on our supers? is an inquiry commonly heard among bee-keepers; and in reply we would say when the hive is full of comb-bees and brood, the weather fine, and the honey yield abundant. It is of little use to go by the dates named in bee-books; the times therein mentioned may be cold and miserable, and putting on supers, which is literally enlarging the hive, may be an injury rather than a help since it will tend to cool the hive when heat should be economised. The style of super to use depends on the taste of the bee-keeper, but we strongly recommend sectional supers as being far preferable to those of glass, the latter being cold, inelastic, and when filled, unsaleable. For description of supers to use, advertisements, or the catalogues of any of the dealers, will supply the information, but we should use nought but sectionals.

Supering may not actually prevent swarming,

but will tend to hinder it. Be careful not to use sections that have been stored away where mice have access: the smell of the vermin is particularly offensive to bees, and is often the reason of their avoiding them. There is no way of forcing bees to work in supers, but when they are in a condition to do so artificial heat applied to them will often tempt them to take possession.

Bees that are preparing to swarm often use their supers, as people do their club-rooms, for lounging, and purposes of amusement, while waiting for expected events. Hence we are often told, 'My bees have taken possession of the supers, but do not work in them.' If the supers were not there the bees would be clustering outside the hive in warm weather, but during cold would crowd into the hive, and preserve the temperature necessary for the safety of the brood.

WIRED FOUNDATION.

We regret that we are unable to offer a further supply of wired foundation. That we had through Messrs. Thurber has been disposed of, and no further supply appears to be forthcoming. A letter received from Mr. Nellis on 18th of March apprised us that a second lot of goods was on the way, and naturally we expected to get tidings of their arrival within a few days; but Messrs. Thurber say they have not yet received the bills of lading, so we are unable to describe them. We have American flat-bottomed for supers, and Raitt's American machine-made foundation for hives on hand.—Ed. *B. B. J.*

THE IMPROVEMENT OF OUR HONEY BEES.

By J. P. Jackson.

One thought in particular occurred to thoughtful bee-keepers who, a few years since, reflected on the best means of elevating apiculture and making it worthy to march side by side with other branches of rural economy, namely, that sufficient attention had not been paid by apiarists to the improvement of the breed of their bees; for while other kinds of stock had been wonderfully altered in character and improved by being crossed with fresh strains, few efforts had been made thus to improve our indigenous bees.

Mr. Edouard Cori, of Brüx, in Bohemia, set himself, a score of years since, to this task, and his efforts have led to discoveries, and have been crowned with a success, that I feel sure English bee-keepers will be glad to have particulars of.

The first point to be settled, before beginning such a task as this, is where the stock in question is found in the state of highest perfection. In the case of horseflesh this was found to be Arabia, of kine, Switzerland, and of sheep (merino), Spain. But whither shall we go for the choicest race of bees? To answer this question Mr. Cori began a series of importations and experimental breeding, and each effort he made brought him nearer to a decisive reply.

He began with a stock of Hungarian Bees from Neusohl, in the Lipta Alps, and found they have a thicker-set and rather longer body than our bee and are quite black, also their pubescence, or hairy covering, is longer and of a light colour. They are superior to our bees, in that the queens are more fertile and the workers hardier. A curious habit they have is, that should a visitor approach quite near to their hive, single bees slowly circle round his head, as the swallow-tail butterfly does round a flower, and if he stays, and does not quietly move away, they dart at him with great fury and attempt to sting him in the face. In the meantime the bees on the alighting-board remain unmoved.

The Carniolan or Ucraine Bee then engaged Mr. Cori's attention. This variety of black bee is well known in Germany, and is celebrated for its great docility and gentleness, as even when excited it is less fierce than any other kind that is known. Its failing is that it is so fond of swarming that it is not able to lay by much honey, and thus, at the fall of the year, stocks of Carniolan Bees often have not even sufficient stores to carry them through the winter.

The Italian or Ligurian Bee was next experimented with, but from some, to me, inexplicable cause, it did not prove its claim to the praises that are generally bestowed on it; Mr. Cori considers that the Smyrna Bee, which will shortly be described, is greatly its superior.

The Dalmatian Bee from Cattaro.—In 1864 Mr. Cori imported, *viâ* Trieste, a stock of this variety. These we may consider the purest *black* bees, for their bands have not the least trace of colour, but are covered with a light yellow pubescence. After a time this rubs off, and the body is then seen to be perfectly black. On the shores of the Gulf of Cattaro there is but little land capable of cultivation, and the native bees are thus obliged to gather most of their honey from the sage and other flowers, which grow in the cracks and crevices of high cliffs and rocks. They therefore have to fly long distances, at a great elevation, and often in a high wind. Their thorax is from this cause developed to a marked degree, and if imported into this country they would be found to fly to a very long distance in search of food. Their abdomen being long and pointed they look like black wasps. There is this peculiarity about them, that, when the day is over and honey-gathering suspended, they frisk upon the alighting-board like flies, hopping about and apparently teasing one another. They are of a good-tempered disposition, and though when you approach their hive they dash at your hands or face, they do not sting if you keep still, but they return to their hive again—very different to our native bees, who dart and sting in one and the same breath. Though as a rule perfectly gentle, they get most excited if they are disturbed by their hive being roughly opened, and plenty of smoke at repeated intervals is needed to enable them to be handled. The Dalmatian Bee is an industrious honey-gatherer, is extremely fertile, and must be considered a great improvement on our English bee.

After a time Mr. Cori was desirous of obtaining another stock of Dalmatian Bees, but unfortunately the Trieste friend who had obtained the former one for him had meantime died. Many were the letters he despatched to addresses given him by friends and acquaintances; but the answer he always received was that Dalmatian bee-keepers had a superstitious horror of selling their bees, and feared that their remaining stocks would die at the thought of their sisters having been betrayed for filthy lucre.

At last a highly-placed personage of Ragusa promised to assist, and said that as in Dalmatia the bees of Turkish Herzegovina were considered superior to the native sort, he would send some of them. He thereupon applied to the Turkish Consul-General at Ragusa, who being, as Diplomatic Agent, above the Pacha of Serajevo, instructed the latter to obtain two stocks for him. In the Turkish provinces bordering on Dalmatia there exists the same horror about selling bees, but a Turkish Pacha takes

little heed of the superstitions of Slav rayahs. Two native hives, one in part of the trunk of a hollow ash, the other of a magnolia, and each carefully packed in a case, were laden on a mule, and after a journey of five days across the mountainous Dalmatian frontier they arrived at Ragusa, and were put on board the steamer for Trieste. Their destination in Bohemia was at last safely reached, and they were found to be filled from top to bottom with comb. Of stores there was plenty, not a cell was broken, and but few bees were dead. This was a result far more successful than had even been hoped for, and probably such a case would not occur again once in a hundred times.

The Herzegovina Bee. The mountain range which separates Dalmatia from the Herzegovina is on an average from six to seven miles broad, with peaks 3000 to 7000 feet high. As there, at a height of from 400 to 500 feet, vegetable life ceases, and bare rocks alone are to be seen, an effectual barrier is placed between the Dalmatian and the Herzegovina bee, and any cross of the breeds is impossible. The side of the range which slopes towards the Herzegovina is far more fertile than that towards Cattaro, and the climate being milder, the flora is more luxurious and diversified.

In such a position a better bee has been developed, and in southern Dalmatia the Herzegovina Bee is greatly preferred. It has no equal among black bees, and is a far better honey-gatherer than they. It is very gentle and industrious, and the hardiest of all bees; the queen also is most fertile. The Herzegovina Bee is as large as the Dalmatian; its abdomen is not so slim, but it has the same well-developed thorax. It has not the intensely black colour of the Dalmatian, in fact if the first abdominal ring is carefully scanned a glimmer of colour may be perceived, but it is not sufficiently intense to be called yellow. The honey which was imported in the original hives was dark, and possessed a peculiar spirituous taste.

If we imagine a line running from North Germany, through Bohemia, the Ucraine, the east coast of the Adriatic, Asia Minor, and Cyprus, and continued as far as Cairo in Egypt, we may consider the Herzegovina Bee as the transition race from the black to the yellow bee.

The Asia Minor or Smyrna Bee. Three stocks of this strain reached Mr. Cori, two in hives that he sent out expressly, and one in a native hive of wickerwork bedaubed with camel-dung and strongly scented with musk. This is not a pure breed, as some bees were banded and some black, and though the variety was cultivated for several years, and every effort was made to obtain a constant breed, in the best stocks of banded bees there would always be now and again a recurrence of black specimens. The abdomen of the Smyrna Bee is thin and waspish, and the pubescence light-coloured; the greater number have the two first bands of an orange-yellow tint. The drones are mostly black, but a few have the first bands dark red, and the remainder black, the belly being of a light yellow colour, extending to either side of the abdomen. They have also on each side two black spots similar to those we notice on wasps. The queens are slim and rather short, and have the first three bands of an orange hue and the remainder of the abdomen of a dark copper colour. The Smyrna Bee is extremely industrious and the queens are most fertile; they are superior in these respects both to Dalmatians and Herzegovinians.

Mr. Cori relates that in 1867, a very poor year for honey, one of his Smyrna stocks, a cast of the year before, increased to nine colonies, four of which gathered sufficient stores to carry them through the winter. This feat created quite a sensation among the bee-keepers of his native place.

It is remarkable how hardy are these bees and how little affected by cold, for early and late, before and after other kinds, they may be seen busily at work, and they sally forth in search of forage on days when others remain at home. When the day's labour begins they do not start off one by one, but *en masse*, and the joyous rush with which they leave their hive is a sight not soon to be forgotten. They are of a peaceable disposition, and allow an observer to approach close to the hive, and even to stand in the line of flight; but, like most bees of a high temperament, if once enraged they are very fierce, and smoke must be freely used when their hive is opened.

It was while Mr. Cori was cultivating this variety that, he tells us, two curious occurrences took place. The first was that the bees of a queenless colony carried an egg he gave them to a sheet of drone-comb which they had built, and duly hatched it into a queen. In the other case, while a swarm was settling the virgin queen that led it off was fertilized, and he found her on his pocket-handkerchief which he had laid down on a garden seat close by.

To sum up the description of this bee, Mr. Cori thinks that, although it is not a pure strain, it possesses some most valuable characteristics, and deserves to be better known. It is especially recommended for crossing with other varieties.

Although the results hitherto attained were so gratifying, Mr. Cori did not rest satisfied, and could not help thinking that, to the south of Smyrna, a still better race of bees must exist.

The Egyptian Bee he now made the acquaintance of, and was surprised to find it far inferior to any of those he had been cultivating. It is very handsome, but, besides being a tropical bee and therefore unsuited to our climate, it is when imported and remains under cultivation much smaller than our native bees; also when enraged it attacks all living beings within reach with uncontrollable fury. It was therefore clear, that in Egypt bees had deteriorated, and that the perfection Mr. Cori looked for, must be sought between Smyrna and Egypt. But such an improved race of bees could not exist in Asia Minor, as there it would be exposed to contamination from the neighbouring black and banded bees. The study of geographical works and books of travel then led Mr. Cori to the surmise, that a perfectly pure race might in course of time have been developed upon an island of the Mediterranean, if it possessed a favourable climate and flora, and were sufficiently distant from the mainland to prevent bees passing to and fro. His thoughts then flew to Cyprus, and its race of bees has realised all his hopes.

This island, which is 149 square miles in extent, has been in a high state of cultivation from the earliest times. Its first inhabitants are said to have been Phœnicians, and about 1100 B.C. Greeks and Egyptians, and ultimately Romans, joined them. Cyprus was at that time looked upon as the seat of all grace and loveliness; the glorious climate, the exuberant vegetation, and the abundance of natural produce of every description, were the theme of constant praise. Even now this island, in spite of the neglect of the Turks, into whose possession it came in 1570, is celebrated for its rare fertility. Luxurious woods of cedars, cypresses, pines, chestnuts, ash and beech trees, cover the slopes of the mountains, and olive and mulberry trees clothe the hills. The cultivated fields bear a constant succession of honey-producing plants, and together the climate and the flora seem those most suited to the highest development of the bee. Cyprian honey had a high reputation long before the birth of Christ, and ancient writers declared it a most acceptable offering to the gods.

The native hives consist of a cylinder of yellowish-red burnt clay, two feet long, nine inches in diameter, and three-quarters of an inch thick; the ends are closed with a slab of kaolin or china-clay, being the entrance hole cut in one of them. Kaolin is very common in Cyprus, and is used for such purposes as building walls and making tiles. It is whitish, soft, and friable, and cuts like meerschaum. This hive is probably the first

kind used in warm climates, as the primitive material it is formed of suggests; it was in use by the Greeks and Egyptians, and was not discarded when the island was captured by the Turks.

Mr. Cori, in conjunction with Count Kolowrat-Krakowski, has imported a large number of Cyprian stocks, and the bees have been similar in every aspect, not one black bee having been found among them. This is a proof that the breed is perfectly pure and constant and need not surprise us when we call to mind that the island is about fifteen geographical miles distant from the mainland.

The Cyprian Bee is, when imported, a trifle smaller than our bee, but it quickly increases in size, and is then the largest honey-bee known. It is of a waspish shape, and is covered with a light-yellow pubescence: the bands are yellow, and the remainder of the abdomen is quite black. Mr. Cori cannot speak too highly of this race of bees, and considers it far above any other he has met with. They have no equal among yellow-banded bees, and are as superior to them as the Herzogovina Bee is to other black bees. The queens are most fertile, and begin to lay earlier than those of any other race; the workers are but little inclined to build drone-comb, and the queens dislike furnishing such cells at all plentifully with eggs. Drones, therefore, hatch out in Cyprian hives much later than is the case with other breeds of bees, and only when the season is far advanced. It not seldom happens that a stock of bees allows a few drones to live peaceably with them the winter through. The workers are very industrious and good-tempered, though they show plenty of spirit when provoked. The Cyprian bee is especially suitable for crossing with other kinds, and the drone in particular is most valuable for this purpose.

Altogether I think the discovery of the Cyprian bee is a most important one for the bee-keeping world, and that the thanks that have been presented to Mr. Cori and to Count Kolowrat-Krakowski by the most notable German bee-keepers and Apiarian Societies, express but a small part of what is due to them, for the great expense and trouble they have incurred, for more than twenty years, in their endeavours to improve our race of bees.

BRITISH BEE-KEEPERS' ASSOCIATION

The Association's programme for the present year is now nearly complete. In addition to the Annual Show at South Kensington, which is fixed for July 27 and following days, and extending over the Bank Holiday in August, and thereby giving the masses of the metropolis an opportunity of witnessing the wonders of bee-life, the Association will offer prizes for bees, hives, and honey at the Dairy Show, to be held in the Agricultural Hall, Islington, in October next. Schedules and entry-forms for both these Shows may now be had upon application to the Honorary Secretary. A good list of engagements has also been made for the attendance of the Bee-Tent at country Shows, including the Royal Agricultural Society's Show at Carlisle. The Honorary Secretary will be glad to receive donations to the Prize Fund for the South Kensington and Dairy Shows; and members of the Association and others who may be desirous of assisting the Association in its work, either by contributing to the Prize Fund or giving donations of books to the Reference Library now in course of formation, are requested to communicate with the Rev. H. R. Peel, Abbot's Hill, Hemel Hempstead. The following donations to the Prize Fund have already been promised:—

Rev. G. Raynor	...	...	...	£1	1 0
Rev. H. R. Peel	...	...	...	2	2 0

The second Quarterly Meeting during the present year was held at 446 Strand, on Wednesday, April 14. Present: Mr. T. W. Cowan (in the chair), Mr. J. M. Hooker, J. Hunter, C. N. Abbott, J. P. Jackson, W. O'B. Glennie (Treasurer), and Rev. H. R. Peel (Hon. Sec.). The following county representatives were also present:—Rev. F. G. Jenyns (Hertfordshire), Capt. Campbell and Mr. F. H. Lemare (Surrey), and Mr. Jesse Garrett (West Kent).

The minutes of the former meeting were read and unanimously confirmed and signed, also the balance-sheet for the month ending March 31st, showing a balance in hand of 24*l.* 18*s.* 5*d.* The Committee then proceeded to discuss various matters relating to County Associations. Suggested rules and regulations tending to promote the union existing between the County Associations and the central Society, were brought forward by the chairman; and having been discussed at some length, it was resolved, 'That the same should be printed and circulated to the several County Associations in affiliation with the Central Society for their approval, and suggestions invited for the improvement of such rules previous to the next quarterly meeting.'

The subject of the formation of Village Bee Clubs, as tending to promote the more efficient working of County Associations, and the spreading of a knowledge of improved bee culture, was brought forward by Mr. F. H. Lemare; and after some discussion it was resolved that the regulations relating to the village bee clubs in Surrey should be sent to all affiliated Associations.

Mr. Jesse Garratt called the attention of the Committee to the desirability of the central Society drawing up schedules of prizes suitable for the adoption of small shows. It was the general opinion of the meeting that such schedules would greatly assist the Secretaries of County and other local Societies, and the Chairman very kindly promised to draw up suitable schedules, and to submit the same to a future meeting.

The Quarterly Conversazione of the British Bee-Keepers' Association was held at the Board Room of the National Chamber of Trade, 446 Strand, on Wednesday evening, April 14th. Dr. Lionel S. Beale, F.R.S., of Grosvenor Street, was voted to the chair, and there were also present the Rev. F. G. Jenyns, Captain Campbell, R.N., Messrs. W. O'B. Glennie, J. M. Hooker, J. Hunter, C. N. Abbott, F. H. Lemare, T. D. Hardy, T. W. Cowan, J. P. Jackson, A. Neighbour, H. Jonas, C. Stevens, D. Clapham, and the Rev. H. R. Peel, Hon. Sec.

Mr. J. Hunter, of 11 Argyle Road, Ealing, read the following paper on 'The Future of British Bee-keeping in a Commercial point of view, and how the Working Classes can be most successfully aided, and taught the Truths and Advantages of Modern Bee-culture:'—

'It is now six years since the British Bee-keepers' Association had its birth, and proclaimed its avowed objects for the "encouragement, improvement, and advancement of bee-culture in the United Kingdom, particularly as a means of bettering the condition of cottagers and the agricultural labouring classes, as well as advocacy of humanity to the industrious labourer—the Honey-bee." For the attainment of these desired ends I, in common with many gentlemen I see around me, have devoted much thought, money, and valuable time; and my object in now inviting discussion is to briefly recapitulate what has been done, and to ventilate the question whether we have adopted the best means in our past power, and how we can improve in the future: for it is indisputable, however well a thing may be done, there is a possibility of doing better; perfection, we may assume, is unattainable by erring man. When this Association commenced its task bee-keeping among the labouring and artisan classes was, we may say, wholly confined to straw skeps and common box-hives, for the exceptions were so rare as to be practically inappreciable. Among educated bee-keepers also the straw skep was still in great force. Although the writings of the late Mr. Woodbury and

others had made known the advantages of frame-hives, their cost as a fancy article was too great, where motives of economy had to be considered, for their general adoption. Again, in a great many instances, although the best of hives might be in use, their owners, from want of ocular demonstration of the way of handling bees, seldom ventured to investigate the internal economy of the hive, and therefore, practically, the expensive frame-hive was no better than a common skep or box. I may be pardoned for citing my own case as an example of the difficulties of an enthusiastic bee-keeper, anxious to advance. I commenced bee-keeping in 1861 with one stock in a skep and its swarm, which latter I put into a frame-hive costing me 26*s*. These soon increased by purchase to about forty, many of them in frame-hives made by my own hands. My text-book was the *Journal of Horticulture*, to which Mr. Woodbury was then a constant contributor. By its lessons I soon became an adept in the art of driving, made many experiments, such as queen-raising, artificial swarms, &c., which very often were failures. From stings, although not daunted, I suffered fearfully, and at the end of six years a virulent attack of what I now know to be foul-brood left me beeless and a legacy of infected hives, which troubled me many years after. During all these years I never met with any one to whom I could personally explain my troubles, and be sure of getting sound, practical, experienced advice. I feel that a few hours spent in the company of one of the many practical bee-keepers I now have the honour of acquaintance with would have saved me years of trouble, much money, and more vexation. Books are valuable aids to all studies—we could not do without them; but it has been no uncommon occurrence, after having shown and explained to a visitor all the working of my apiary, for my guest to exclaim, "You have taught me more in one hour than I could have learnt from books in a year." This little personal digression will, I believe, exemplify the greatest requirement to advancement of apiarian knowledge, which I will call "practical demonstration;" and to fulfil this need a great step was taken at the first Crystal Palace Show, not only by the manipulations, but in the opportunity given for lovers of the bee to meet together, gossip, handle, criticise, and examine all hives and appliances, and demand and give explanations of the various exhibits.

'By "practical demonstration" I do not merely mean the manipulatory exhibition with live bees we have had at all our shows, but all other processes of management. With our driving we have descended to too much of the showman, only defensible on the same ground that the liquor and opium duties are—that it brings cash to the exchequer. More practical work was done at the first Show than of late years: the Extractor was in greater use; the feeding-bottle explained, and to be seen at work; fully-stocked hives were handled and shown, the examination and view of which sent away the *real* bee-keeper full of ambition to go and do likewise. The driving at first was a great attraction, not only to the general public, but to the rustic bee-keeper of many years' standing; but the process, thanks to our exertions, has become well known, and our appreciative audience now, at our metropolitan Shows at least, is mainly confined to non-bee-keepers, who are surprised, and wonder at the "performing bees" and their showman. Practical demonstration should include many more things than we have seen at our great Shows. There are difficulties, I know, but difficulties, grasped, disappear, not all at once, perhaps, but one at a time; and so that we make progress, never mind the speed. On the art of driving depends the saving or destruction of the bees in autumn. The lesson we have given herein has taken root, and in time will flourish vigorously. In a few years the cottager will have learnt that if he does not want his bees himself they are a marketable commodity. Last autumn I saw several advertisements for driven bees, and I find their price is rising; and every bee-keeper who learns our lesson in driving returns home a wiser man and a more qualified teacher to his neighbour.

'One principal desideratum of the Annual Shows has been to demonstrate how a frame-hive within the means of the cottager can be made; for in this mainly depends whether or not the frame-hive shall become as common as, or take the place of, the skep. It is not that a bee-keeper prefers the straw skep, but that it is cheaper. I venture to assume that, allowing a straw skep and its stand cost 2*s*., if the labourer was offered a frame-hive equally complete for 1*s*., he would choose the latter, the cost being the thing principally standing in the way of its adoption; and unless this can be at least equalised, or it can clearly be shown and brought home to the man's understanding that the profit is necessarily greater from the frame-hive, there is no chance for a general reform in that direction. The first of these contingencies, I fear, cannot be realised, but it remains to be seen how near we can attain to the desired end; and probably it will be thought we have already discovered this by the results of the competitions at our Shows for "the best and cheapest frame-hive for cottagers' use," &c. But I much fear the object of many exhibitors has been not to sell the hives, but to win the prize; and the desired hive is not within reach of the cottager, and I doubt, if ever made by paid labour, it can be bought cheap enough to supplant the skep. It may be useful to compare English hives with American as to their relative cost. I find that the prize hive at the South Kensington Show, 1879, cost 10*s*., no reduction being offered by the dozen or hundred, or in the flat not put together. In America many are sold in this latter state, as I believe they are in this country by some hive-makers. From catalogues now before me I see Mr. Root, of Medina, Ohio, supplies his ten-frame Simplicity hive (frames $17\frac{5}{8}$ inches by $9\frac{1}{8}$ inches) complete, with cover-bottom, frames, and mat, for $97\frac{1}{2}$ cents (3*s*. $11\frac{1}{2}$*d*.), 10 cents (5*d*.) being charged extra if painted. This hive has no facilities for supering, these being given generally by another hive, exactly similar, filled with sections, and used as an upper story, making the whole cost about double. The hive that most accords with our ideas of what is wanted here is that which Mr. Root calls his Story-and-a-half hive. The lower portion is as above, and a shallow ridge-roof upper story, containing twenty-seven section-boxes in position for filling, this costs 4*s*. 7*d*., and is a much cheaper article than any produced here. When these goods are taken by the hundred in the flat a reduction of about twenty per cent is made. This difference in price is not the only consideration, the carriage of hives, made up with the necessary crate for protection, being an appreciable item in their cost. A glance at any American trade catalogue will, I think, satisfy most people that manufactured goods, with few exceptions, are more costly there than here, and I know not why hives should be one of these exceptions; but I rather think it is the *quantity* manufactured that, in a great degree, rules the cost. If this is the case it may yet become worth while for some of our English hive-makers to vend their goods at a much lower, yet remunerative, price than at present: and the Association would do good service if they can find it in their power to organize some means by which cottagers may get the shaped material at lowest prime cost, and access to a pattern hive by which to build their own. For what we may term the aristocracy of bee-keepers, I affirm the Association has done enough and to spare, and its money may be applied to better use than again offered as a premium for the designing of hives with all the intricate, complicated, and expensive appliances that can never be of any use to the cottager we hope to benefit, but, on the contrary, alarms him as a possible cost should he adopt our notions.

'Straw skeps do not give the necessary facilities for

raising honey-comb in a nice form, and it is only by the adoption of frame-hives that we can acquire the means.

'The future of British bee-keeping, in a commercial point of view, mainly depends on the ability of the bee-keeper here to compete with the American; for there is no denying the fact that the market for first-class honey-comb at prices ruling of late years is lost, and at lower prices is now in the hands of others. Our consolation is that America has the dead-weight against her of freight and packing as a set-off against her longer summers; and I believe it is not yet too late for our countrymen to hold their own against all comers if they will accept the lesson offered, and learn to market their honey in the same attractive form that we see filling our grocers' shops. To teach how to do this must now be the aim of the British Bee-keepers' Association and the various county associations. At the Shows the cottager sees full sections which he must admire, and perhaps empty sections are also there, but nothing to tell him how they get filled—he cannot understand them. If I presented him with a hundred they would be useless, he would not at all comprehend how to use them. I believe my *Manual of Bee-keeping* is at present the only English book that treats of them, and probably he has never seen or heard of that; therefore what is the use of telling him he must get up his honey in a style that is out of his power? The remedy for this is to make a prominent feature at the shows the exhibition of sectional supers in abundance, supers filled and supers empty, on the hives as well as off them: let the learner handle the empty ones and see how they are placed for the bees to fill, let him, if possible, see the bees filling them, and I venture to assert that five minutes' sight of such in actual position partly filled, will more impress the lesson on a working man than talking to him or reading for a week. We, the members of the Association, are banded together for a good purpose, to teach and be taught; while we do not fail to learn all we can, let our efforts be equally exerted to teach; and I would suggest that every one who is able should keep a show-hive in as complete a state as possible, to which he should invite the attention of all neighbouring bee-keepers, more especially at any specially appropriate times, such as when bees are actively storing their honey. Also let every scientific bee-keeper have minor exhibitions of his own, inviting all comers to see, perhaps, his filling supers, perhaps artificial swarming, at another time the autumnal deprivation of honey, driving, uniting, &c. A brief notice in a local paper will generally draw together an appreciative group of bee-keepers. Pupils will be made in more classes than one, who will all tend to spread the good work.

'The introduction of comb-formation will prove of immense value to bee-keeping, but we can hardly expect cottagers to adopt it at once; the first outlay is a bar to this, although it may afterwards be recouped, but I venture to say an intelligent man who has adopted and succeeded with frame hives will soon see the advantages of foundation. The exhibition of comb-foundation, and a plain explanation of its use, cost, and value, should, I think, never be omitted from an exhibition.

'The extractor, like the foundation, is also, I think, an article for secondary adoption; the man must have learned to manage his hive and handle his bees before he can use it, and when he can do this he probably will discover a want which the extractor will supply. When practicable, the instrument should be shown in action.

'The cottager seeing the beautifully filled supers displayed so abundantly in the grocers' windows, can no longer wonder that he cannot sell his honey, and to impress upon him that if he will only take the lesson to heart and place his honey in an equally tempting form before the public, and that it is in his power to do so, it also will soon find buyers, must be the work of the Association. Without he fully comprehends this, his bee-keeping will not pay, and the work of the Association will be in vain. The profitable use of frame-hives entails more trouble on the owner than the old slovenly use of skeps, giving of course better returns, and I think it will be found that as improved methods of bee-keeping become general, the idle and inattentive bee-keepers will be weeded out, for, in competition with the superior produce we hope will be sent to market, their harvest will, from its inferiority, be unremunerative, and their bee-keeping abandoned. While we give the place of honour to full, clean honey-comb, we must not neglect or forget liquid honey—the common form in which bee-keepers obtain it. We will not dilate on the wasteful, uncleanly manner of depriving the bees of their stores, but pass to the supposition that a cottager has obtained say fifty pounds of honey, stored doubtless in an odd lot of old pickle jars, bottles, jugs, or anything but such clean, neat glasses as should tempt a buyer. No facilities are offered for the purchase of a pound or two by a passing stranger. No show is made of the article to sell. The owner probably inquires of his neighbour, the chemist or grocer, if he wants any honey, and if the reply is in the negative, it remains in the cupboard, and the cry goes forth that it is no use raising honey, for we cannot sell it. Again I recommend a lesson from the Yankee. See the pretty neat glass jars, full of the sweet liquid they send over here. Our grocers find a ready sale for them, not because the honey is better than ours, but because it *looks* better. "Fine English Honey" will hold its own, even against the famed honey of Hymettus, provided it appeals to the eye as well as the taste; and although glasses are costly, the increased value of contents will return the outlay. A bee-keeper who habitually obtains honey for sale, will in most cases readily find a home market: customers coming to him for honey that they know to be pure, clean, and wholesome. But when the home market is not to be had, the grocers of country towns will be found buyers, if, as I said before, the honey is placed before them in a tempting form.

'To return to the queries at the opening of my paper,—Whether to teach improved methods of bee-culture the Association has adopted the best means in the past, and how to improve in the future. I say if it has not done the best it has done *well*, and for the future it may do *better*, keeping more to the front other details of management than driving, and more especially bringing prominently to notice the manner in which the Americans so far excel us in marketing their honey, and aiding our countrymen to follow in their steps. At my suggestion prizes will be offered at our next Annual Show for the exhibition of hives with supers in being filled with the bees; and I have in this paper stated other points which I believe the Association could profitably adopt. Those gentlemen on the Acting Committee bring forward anything that strikes them as likely to be beneficial, but I do not lose sight of the fact that we have many talented members who are not so placed, and whose ideas are probably of greater value than ours, which have but to be brought before the Committee to ensure adoption. The ends of my paper will be answered if in the discussion I invite, some such valuable suggestions are brought to light.'

Mr. Cowan wished to make one or two remarks upon the paper. The American hives could be made cheaper than the English hives, because the wood in that country cost less than half what it did here. As to cottagers, the wrong mode had been adopted with the view of teaching them bee-keeping. A great many sensational writers had said there was an immense profit to be made out of bee-keeping. This, however, was the same as other businesses: it was necessary to spend a certain amount of capital before the profit could be obtained, and this the cottagers could not do. To give a cottager a bar-frame hive and tell him to stock it with bees was about the most harmful thing they could do; and as to the

profits, they would find, by taking the bad years with the good and striking a balance, the profits of bee-keeping would come to about the same as in other things. Bee-keeping could not be made to pay unless it was properly carried out. Moreover, instead of telling bee-keepers to use bar-frame hives, they must begin with the A, B, C, and teach them the science of bee-culture. It was quite true that everyone could keep bees, but it was not true that everyone could be a bee-master. So the cottager who is willing to learn, and go in for the science of bee-keeping as well as the practical part of it, would be likely to succeed. As to commercial bee-keeping, that was a thing of the future. Here, in England, they were principally amateur bee-keepers, there being, he thought, only one or two at present who go into it in a wholesale manner: they would have to pick up a great deal from the Americans if they were to go in for commercial bee-keeping. No doubt it would pay if sufficient time were devoted to it, but not only a small portion of one's leisure was given to the subject.

The Rev. F. G. Jenyns said he lived among cottagers, and knew they were quite able and willing to learn. There was only one suggestion he should like to make, and that was with respect to the hives. It was a very difficult thing for a labouring man to obtain a good hive. It meant an investment of capital which he was either unwilling or unable to make, and, therefore, every encouragement should be given to him to make his own hive. He had seen very good home-made hives, and at the country shows he should like to see prizes offered for hives made by *bonâ fide* labourers out of old boxes or anything of the kind they could get.

Capt. Campbell, R.N., said the future of bee-keeping by cottagers was, in his opinion, a very important point. He had been rather censured by his learned bee-keeping masters for recommending cottagers to commence with straw-skeps; but the price of bar-frame hives was such that cottagers could not adopt them at present. He quite agreed that it would be desirable to induce the labouring classes to make their own hives. In his neighbourhood they had held a local inquiry on the subject, and one of the committee exhibited a hive that he had made himself for 2*s*. Of course this gentleman had a circular saw and a lathe that cost 60*l*. At the same time the exhibition of the hive had been useful, and in this way he thought cottagers might be taught how to make their own hives. He still held that it was best for bee-lecturers to encourage the cottagers to begin with the skep. He would get plenty of stings and lots of trouble, and would then, *con amore*, go in for bar-frame hives. In Guildford they had a very industrious man who was presented with a frame-hive stocked with bees; but the poor bees came to grief, and there was the empty hive, the man not knowing what to do with it. If this man had commenced with a straw-skep he would probably have been better able to manage the bees in a frame-hive. He did not think the English had much to fear from the American competition, for he had purchased a 2 lb. sectional super, but nobody in his household would touch it.

Mr. J. P. Jackson thought that in future honey sent from America would be slung honey. With reference to slinging honey for cottagers, the Surrey Association was about to establish bee-clubs, and when once this was adopted there would be no difficulty, each centre having a slinger, members could have honey slung for them, either at their own homes or at the depôt, through the medium of the clubs.

Mr. Peel was pleased to inform the meeting that a prize was to be offered for the best hive made by a *bonâ fide* cottager. But it was almost as difficult to define a *bonâ fide* cottager as a *bonâ fide* traveller. He thought a cottager was a man whose income did not exceed 30*s*. a-week, and who did not live in a house rented at more than 10*l*. a-year. As to cottagers commencing with straw skeps, he quite endorsed the opinion of Capt. Campbell, for it would not be wise to at once take cottagers to a point that had only been reached by themselves after great difficulty and perseverance. The hives of Mr. Neighbour which were exhibited at the last Kensington show, were, in his opinion, admirable for cottagers' use; and they only cost 5*s*. each. They were a round straw hive with a flat top, having holes in it, into which bees could ascend and work in supers. There was also an admirable wooden cover to protect it from the weather, and anyone who started with such a hive would attain to great knowledge of the hive and the customs of the bees. And this was a most essential point for a bee-keeper to acquire. In Hertfordshire they had adopted the system of having depôts in all the principal towns in the county, at all of which there either was or shortly will be one of these hives placed so that all the bee-keepers in the neighbourhood might see it, and if they chose so to do, recommend it for the cottagers' use. They had hives of all other descriptions so that people could pick and choose as they might please. An extractor was also placed at these depôts, and bee-keepers could have the use of it for extracting their honey, either at their own homes or at the depôts. This plan was commenced last year and found to work very well. He agreed with the suggestion of Mr. Hunter as to aiming at a higher education in regard to the exhibition of bees at shows; and for this purpose Mr. Baldwin was constructing a travelling moveable frame-hive, which he could take about with him, remove the frames, and show an audience the principles of construction. In the proposed tour through Ireland next autumn, whoever went must take one of these travelling moveable frame-hives with him in order to show the Irish people exactly what may be done in bee-keeping. He was very much struck with Mr. Hunter's suggestion, relative to meeting together for the interchange of ideas; and when recently in Warwickshire he met a very intelligent bee-keeper who told him that he should be most delighted to confer with others on the subject of bee-keeping. When a bee-keeper found himself in alliance with all the best bee-keepers of the present day, and, through them, with the writings of all bee-keepers of former days, who had been the pioneers of bee-culture, he then began to feel that he was pursuing a noble task which would elevate him and bring out the better part of his nature. He hoped they would all profit by the paper of Mr. Hunter, and endeavour to do what they could to bring cottagers to adopt a better system of bee-keeping so that they could compete with their American neighbours, and reap the advantage which their being on the spot ought to secure for them. He allowed the fact of British honey being superior to that of the Americans, and expressed hope that if this year the sun condescends to show himself on occasions, British honey would be found more commonly on breakfast-tables, and that the Americans would be forced to consume more of their own honey themselves.

Mr. Stevens was of opinion that the English manufacturers should endeavour to reduce the price of their hives, and he was glad to hear the suggestion with the view of encouraging cottagers to make their own hives.

Mr. Glennie said one way to teach cottagers how to make cheap hives was to tell them where to get boxes of suitable dimensions, such as were used for packing American lobsters, which contained in themselves the material for bar-frame hives.

The Rev. F. G. Jenyns said if carpenters were included in the definition of cottagers, ordinary labourers would be discouraged.

Mr. C. N. Abbott: That would be hard on the carpenters.

Mr. Peel said the competition would include straw hives.

Mr. Hunter, in reply, said he did not disapprove of bee-keeping being commenced in straw skeps, but he wanted to teach those who had had these skeps in use

the advantages of bar-frame hives. As to slinging honey, it was important not to disturb the hive, but to take the slinger to the hive. Some of the American honey was bad, but he had a section that seemed remarkably good. He quite agreed with the idea of cottagers making their own hives, and the best box for the purpose was the Frederichshal water box, which consisted of substantial wood, and plenty of nails; this could be purchased for 1*s.* or 1*s.* 6*d.* The Swiss-milk box was very good, and these could be obtained at 2*s.* 9*d.* per dozen.

Cordial votes of thanks were passed to Mr. Hunter for his excellent paper, and to Dr. Beale for presiding, and the proceedings terminated.

Suggested Conditions of Affiliation for County Associations desiring to Co-operate with the British Bee-keepers' Association. To be Discussed at the next Quarterly Meeting of County Representatives.

County Associations desirous of co-operating with the Central Society, and of being affiliated to it, shall accept the principles enunciated by the Central Society; shall undertake to send a yearly report and an audited balance sheet; shall pay an annual subscription of one guinea.

Privileges of Affiliation.—Every affiliated association shall have power to send two representatives to attend each quarterly meeting of the Central Association, and to make, through them, any suggestions or recommendations for the mutual advancement of the relations between the Central and Affiliated Associations. Shall be entitled to receive a copy of all papers and memoranda published by the Society, except those for which a charge is made. One copy of all publications for which a charge is made shall be supplied to Affiliated Societies at the same price as charged to members of Central Society. May obtain from the Central Society any information regarding the laws, regulations, and other matters connected with the advancement of bee-culture. Shall have the free use of the Bee Tent at their annual shows, on condition that it is accompanied by the Society's authorised expert, who will superintend its erection and removal. (The expert's fee of 10*s.* 6*d.* a-day and his travelling expenses, as well as the travelling expenses of the Tent to and from the exhibition, to be paid by the Affiliated Association.) Shall be entitled to all the proceeds accruing from the use of the Tent at their show. Shall be entitled to receive a Silver Medal, a Bronze Medal, and a Certificate of the Association, to be offered as prizes for honey, more especially for the production of honey in the comb.* The members of affiliated associations shall be allowed to avail themselves of the faculties provided by the Central Association for the sale of honey in the London markets.

General advantages to be derived from Affiliation.—1st. The interchange with other districts of experience and information, *e.g.* on the advancement of bee-culture, on the practical measures for improving the methods of bee-keeping amongst the cottagers on the means of disposing of honey, on the best method of organizing district societies, and on other kindred subjects. 2nd. The improvement of bee-culture by concerted action.

Suggestions to Affiliated Associations.—1. It is suggested that affiliated associations should adopt the same designation as the Central Society (with the exception of the substitution of a County name for 'British'), and add the words, 'In connexion with the British Bee-keepers' Association.' 2. That affiliated associations should issue their reports and balance-sheets yearly, made up to 31st December. 3. The reports should be issued by the 1st February in each year. 4. That in order to secure uniformity, the size should be ordinary 8vo., and that the length of line be similar to the report of the Central Association. 5. The sequence of subjects in the report should be as follows:—1. List of committee and officers; 2. Report; 3. Financial Statement; 4. List of Subscribers, printed so as to be separable from the body of the Report. It is requested that, to facilitate separation, the list of subscribers should in all cases be made to begin on a fresh leaf: not on the same leaf as the balance-sheet or other matter. 6. It is also suggested that the balance-sheet (specimens of which and of a title-page can be had of the Hon. Sec. of Central Society) should contain a note stating the gross amount of liabilities (if any) at the time of balancing the accounts. 7. That a certain number (say twenty-five) of copies of these reports be sent to the Central Society to be bound up with its Annual Report; a bound copy of such reports to be sent to each affiliated association. It is hoped that affiliated associations may be able to carry out the suggestions with regard to annual reports, so that the report may be uniform in style. It is, of course, essential that the reports should be uniform in size, otherwise they cannot be bound together.

* Secretaries of affiliated associations are requested to furnish the Hon. Sec. of the Central Association with the names of the winners of medals and certificates, with a view to their being included in the Annual Report.

BELVOIR CASTLE AND SPRING FLOWERS.

Several leading apiarians, accompanied by the Rev. Herbert R. Peel, of Abbot's Hill, Hemel Hempstead, Hon. Sec. of the British Bee-keepers' Association, paid a visit to Belvoir on Thursday, the 15th ult., for the purpose of surveying the rich display of spring flowers, with a view to recommending their more general culture as bee forage. Wm. Ingram, Esq., of the Belvoir Castle Gardens, who takes a deep interest in the work of the Association, and who has on various occasions forwarded collections of spring flowers to the meetings, besides reading a paper before the Association, very kindly invited the members to Belvoir on this occasion; the Lincolnshire Association was represented by H. Yates, Esq., of Grantham, and G. F. Barrett, Esq., of Spalding. Mr. Ingram met the party at the Denton Gate entrance, and accompanied them to 'Belvoir Inn,' where luncheon had been provided. They were then conducted to the gardens to enjoy a sight of the numerous beds, clothed with a mantle of sweet flowers of endless variety, such as can be seen at few places in the perfection attained at Belvoir. It was pleasing to notice the visitors, pocket-book in hand, taking down the names of the plants as the latter were fully described by Mr. Ingram—strongly reminding one of the busy bees themselves, whose welfare they so closely watch, so eager were they to gather, if not the honey, a full knowledge of the flowers best suited for the production of that commodity, at a time when the delicious nectar is scarce. It would be well if all bee-keepers, who have a piece of ground at disposal, would give more attention to the cultivation of spring flowers; if this were done, not only in many instances would an untidy corner be made to look pleasing, but the result would also be most profitable to the enterprising apiarian. The party, having spent some three enjoyable hours with the urbane gardener, expressed themselves amply repaid for the long distances some of them had travelled—from the Metropolis, Kent, Surrey, Herts, &c.—and they returned home rich in the knowledge of spring flowers, and delighted beyond measure at the great courtesy and kindness, as well as with the valuable information, they had received from Mr. Ingram, to whom all thanks are due for his successful endeavours to make the visit both interesting and profitable.

The presence of the Baroness Burdett-Coutts, President of the Association, was anticipated, but her ladyship being on a visit in the south was prevented, as also was the Bishop Suffragan of Nottingham (Dr. Trollope), President of the Lincolnshire Bee-keepers' Association, whose

absence was explained by the following letter, addressed to Mr. R. R. Godfrey, the Hon. Sec., from Gainsborough: 'Dear Sir,—I am now on my visitation tour, which absorbs all my days for the present, hence I much regret that I cannot be with you and our bee friends at Belvoir on Thursday next, which I beg you will express to them. I am, yours, very faithfully, E. NOTTINGHAM.'

DEVON AND EXETER BEE-KEEPERS' ASSOCIATION.

The annual meeting of the members of this Association was held at the Museum on Monday, April 12, the right worshipful the Mayor (W. H. Ellis, Esq.) presiding. There were also present, the Rev. J. G. Dangar, Mrs. Hartley, Miss Pocock, Admiral Norman, Messrs. Cowan, R. J. Gray (Hon. Treasurer), W. N. Griffin (Hon. Sec.), W. H. Gamlen, J. Harding, S. B. Fox, and W. Church.

The report of the Committee was read by the honorary secretary, and its adoption moved by the right worshipful the Mayor of Exeter, and seconded by Mr. Gamlen, was carried unanimously with applause. Votes of thanks were accorded to the President, Chairman, and retiring officers, to the Devon and Exeter Albert Memorial Museum's Committee for the use of the committee and meeting rooms, and to the Committee of the British Bee-keepers' Association for their help. The right worshipful the Mayor was elected President, and the Committee—the Rev. J. G. Dangar, Rev. J. Dickenson, Rev. P. Williams, Rev. E. Gregory, Rev. E. Neame, and Mr. S. Bevan Fox,—were unanimously elected for the ensuing year, and Mr. W. N. Griffin was re-appointed hon. sec.

Under the auspices of this Association lectures on the 'Wonders of the Bee-hive' were also delivered by Mr. F. R. Cheshire, A.C.P., F.S.A., at Tiverton, on Wednesday, 14th April, the Rev. E. T. Gregory, Vicar of Halberton, in the chair.—At Plymouth, on Thursday, 15th April, A. J. Kerswell, Esq., President of the Mechanics' Institute in the chair.—At Torquay, on Friday, 16th April, E. Vivian, Esq., in the chair.—At each of the above places the Hon. Sec. W. N. Griffin, Esq., previous to the lecture, addressed the various meetings, pointing out the objects of the Association, alluded to the work carried out during the last year, and hoped that not only apiarians but others would be induced to help forward the work by adding their names to the list of members.

Syllabus of the Lecture.—The life history of the bee-grub—the wondrous changes of the bee pupæ—the eye; its achromatism—singular discoveries of Dr. Hicks—the use of simple and supplementary eyes—the tongue; its adaptation to flowers—the wings; why four in number, instead of two—breathing apparatus—the modifications of the legs for pollen gathering—what is wax?—queens: their productiveness; how produced—marvellous transformations brought about by feeding—romance of bee-life—swarming—modern inventions and discoveries, &c.

All who heard Mr. Cheshire were highly pleased.

DORSETSHIRE ASSOCIATION.

A meeting of the Committee of the above was held at Dorchester, March 23rd, for the purpose of auditing the accounts, appointing the officers, and discussing the programme of the Association for the coming year.

The accounts were audited and the report ordered to be printed.

The Honourable G. D. W. Digby, Esq., M.P., was elected President in the place of the Rev. G. W. Skene, who has left the county. Mr. W. H. Dunman, jun., was elected joint hon. sec. with Mr. Norton, and Mr. Coombs and Mr. Dibben were elected members of the committee in the place of Mr. Sly and Mr. Newman, deceased.

It was decided, if possible, to hold two Shows this year—one at Weymouth and one at Sherborne, in connexion with the Horticultural Shows at those places; also to apply for the British Bee-keepers' Association Tent.

Mr. Cheshire gave a lecture on bees the same evening at Allington Hall, Dorchester, which was very well attended, especially by the labouring classes.—W. H. DUNMAN, JUN., *Hon. Sec.*

VILLAGE BEE CLUBS.

At the Conversazione on the 14th ult., F. H. Lemare, Esq., of Guildford, Hon. Sec. of the Surrey Bee-keepers' Association, read the following, which he proposes as an explanatory circular for the use of those intending to form Village Clubs in that county, and which, subject to alteration in names, might be helpful to others:—

'In affiliation with the Surrey Bee-keepers' Association. Village Bee Clubs for Surrey. *Object.*—To induce cottage bee-keepers to increase their stocks of bees, to take more care of them, and to lead them to adopt improved methods in bee-culture. *Suggested rules.*—That all members of a club should be members of the "Surrey Bee-keepers' Association." A club should elect its own secretary, who should be the medium between it and the parent association. That the members of a club should hold monthly meetings to learn from each other all that may have happened to their stocks from time to time, so gaining information from one another. Greater knowledge may then be arrived at, inducing improvements in their different ways of management. The parent association will willingly give any information and assistance on application to the secretary. The Association propose from time to time giving short lectures, or holding conversation meetings with members of the clubs; also offering bar-frame hives on easy terms of payment. Showing the advantages of these hives over the common straw, and with them the honey-slinger. A weekly subscription to meet expenses is suggested, the amount and plan of payment to be left to the club. It might provide for the purchase of hives, or any other thing connected with bee management. A market for the sale of honey is being arranged: but if preferred, the secretary of the Association is willing to purchase all honey a cottager may have, provided he himself may sling it from a bar-frame only, within six miles of Guildford: but he cannot take honey from straw hives, except it is in sectional supers. Any cottager, or other member of the Association, willing to commence a club, shall receive all the aid the secretary can render.—F. H. LEMARE, Hon. Sec. S. B. K. A., *Guildford, 1st March*, 1880.'

SIZE OF *JOURNAL*.

We have received the following letters in reply to our desire for an expression on the part of our subscribers as to the advisability of a change in the size of the *Journal*, and the following are a few of of the many with which we have been favoured:—

'I notice you ask for suggestions as to altering the form of the *British Bee Journal*. Really I do not think you want any alteration whatever. The size, shape, and style of printing are, in my opinion, all that can be desired for neatness and elegance, and being printed on toned paper gives it altogether a finished appearance. Being a printer myself, I have always admired the neat and clear manner in which the printing has been done. I think if you alter the shape it will be decidedly a step in the wrong direction, and I should be very sorry to find it changed in any way from what it has been.—SAMUEL SIMMINS, *Crawley, April 15th.*'

'I cannot agree with Mr. Carr to reduce the size of the

pages of the *British Bee Journal*, for the reason that I, and no doubt many others, have had the first six volumes bound up, and for the future to be "dwarf" would have an odd, if not mean, appearance, so much so that I should not be "oddity" enough to go to any further expense to have them bound. But I am only one individual; nevertheless, I don't like things altered without very good and sufficient reasons.—S. F. Clutten, *Fressingfield, Norfolk, April 16th.*'

'Find a Post-office Order for 6s. for next volume of *Bee Journal* (the *last* for me if you alter the size), and 1s. for the cover for volume now ended. My advice is, that you should permanently give us four pages more and a few more woodcuts. I think then you will please every one of your subscribers.—Chas. H. Edwards, *29 Oakley Square, April 9th.*'

'You request subscribers to give their opinion on the proposed alteration of size of the *Journal*. It seems to me a pity to make any change. It is very convenient as it is, and it spoils the uniformity of the set when you have the volumes bound from their commencement.—A Lady Subscriber, *Stockton-on-Tees, April 6th.*'

'I see you ask your subscribers' opinion on the size of the *British Bee Journal*. For my own part, I care little about the size, so long as it contains such valuable information as preceding numbers have done, although if smaller and thicker it would be more in book form when bound.—A. W. C., *Middleham, April 9th.*'

'I stated in a former letter (I think it was of date 23rd Feb.) that my subscription would be renewed in due time; but on receiving the *British Bee Journal* today I concluded to withdraw that statement. The size and form of the *British Bee Journal* are, in my opinion, all that can be desired, and two volumes will make a nice and handy book, very cheap, because the matter is very good. Should you see fit to continue the size of the page and the form, I will renew for the volume; if not, I will not require vol. 8.—John Hume, *Cherrytrees, Dumfries, April 3rd.*'

'I should be sorry to have the size of the *Journal* changed, even if I preferred the smaller size, which I do not. Let all be same-sized volumes from commencement.—C. E. F., *Maidstone, April 8th.*'

'Respecting proposed alteration of form of *Journal*, I think any change would be a mistake. In its present form it is readable and convenient, and for binding it is suitable for yearly volumes or several in one. If smaller, say like *Macmillan's Magazine* or the *Cornhill*, the double column would be too narrow, especially for small illustrations; and if the whole width was used there would often be loss of space: while if the printed matter was in one column, with your numerous small paragraphs there would also be great loss of space. And while there are these and perhaps other objections, I cannot see any advantage to be gained by the change.—J. B., *Fallowfield, Manchester.*'

In the face of these opinions, and without one other in favour of the proposed change, we feel encouraged to continue in the old course.—Ed.

SALICYLIC ACID.

(*From the 'Journal of Horticulture.'*)

Having determined to add salicylic acid in a diluted form to the syrup with which I am feeding my bees, I collected the various recipes and placed them in the hands of my friend and colleague, Mr. J. E. Legg, who has charge of our chemical laboratory, requesting him to prepare the salicylic solution. Finding considerable discrepancies between the amounts of the acid recommended by its various friends he has been good enough to draw up a paper with details, and I venture to forward it to you for publication.—E. Bartrum, *King Edward VI.'s School, Berkhampstead, Herts.*

The preparation recommended by Herr Hilbert, the German bee-keeper, is a 10 per cent solution of the acid in pure spirits. He tells us to add one drop of this solution to a grain of water and use the mixture. A preparation suggested as an improvement on this by Mr. Muth consists of a solution containing rather less than 2 per cent acid and 2 per cent borax in water. Both these solutions appear to be used merely for disinfectant purposes.—*Cook's Manual, p. 261.*

Two formulæ are given for the preparation of food in the *Journal of Horticulture*, October 2nd, 1879, and in the *British Bee Journal*, December 1st, 1879, p. 169, the recipe of Mr. Cowan is given. It is a solution in water containing 1¼ per cent acid, and 1¼ per cent borax. One ounce of this is directed to be added to certain quantities of sugar, &c., and would form a mass containing ·00477 per cent acid.

In the *Journal of Horticulture* (February 19, 1880, p. 150) Mr. J. M. Hooker recommends the use of a patent solution 'sold in pint bottles containing the equivalent to five ounces of acid,' that is, a solution of 25 per cent acid. He directs one half-ounce of this to be used instead of one ounce of Mr. Cowan's solution, so that one would obtain a food mass containing ·0477 per cent acid, or exactly ten times as much acid as Mr. Cowan recommends. In the same *Journal*, October 9th, 1879, Mr. F. Cheshire recommends a food mass containing nearly four times as much as that recommended by Mr. Cowan —*i.e.* 30 grains to a 14 lbs. mass of food instead of 8 grains.

It is obvious, therefore, that apiarists are by no means agreed as to the exact proportions of acid to be administered to bees in their food for the cure of foul brood, and inasmuch as their observations are based on different strengths of acid, their results do not admit of comparison. If, however, some definite solution were adopted as a standard, and the amount of it varied in food, say 10 lbs. sugar, we should then soon arrive at an experimental and therefore sound knowledge of the proportions of acid best suited to the end in view, instead of, as at present, finding one author recommending ten times the amount suggested by another. I would venture to suggest as the standard solution a 5 per cent solution of acid in water containing also 5 per cent borax, prepared by dissolving one ounce of borax and one ounce of acid in a pint of water. The addition of one ounce of this solution to a food mass containing 10 lbs. of sugar, would give a mass with 0·01 per cent of acid.—J. E. Legg, B.A.

['In the multitude of counsellors there is wisdom,' but it is not always easy to pick it out. The recipe given by Mr. Cowan works well, and has the rare merit that it provides the unscientific with a mixture that can be used at once for disinfecting by painting or spraying, or may be bottled and kept to be added to the liquid, food to be given to the bees for medicinal purposes as occasion may require. Divested of all technicalities, simple as A B C, it directs that an ounce of salicylic acid and an ounce of borax shall be dissolved in two quarts of water; it is then 'the Cowan salicylic solution,' thoroughly tested, and invaluable as a disinfectant for painting hives, frames, and floor-boards, and for spraying diseased combs. If it be necessary to give it to bees medicinally, an ounce of the solution should be stirred into each gallon of syrup and it will be ready for use, but as amateurs do not all make syrup by the gallon, we would observe that a teaspoonful of the solution mixed with a pint of syrup would make the same chemical strength. For the convenience of those who have difficulty in procuring the acid or borax, we offer to send an ounce packet containing equal parts of each to any address, post free, for a shilling. Our acid is delivered to us in sealed boxes, labelled, Acid Salicylic, crystals chemi-

cally pure after Kolbe's Patent, manufactured by Dr. F. V. Heyden, Dresden, Patent No. 595, 1874. E. Schering Berlin, License of Patent; and our borax is also guaranteed pure. We mix a pound of each, and when thoroughly incorporated send it to those who want it. Mr. Bartrum and Mr. Legg have rendered good service in bringing this matter so tersely before the bee-keeping world, and deserve a hearty vote of thanks, as does also Mr. Cowan for his simple recipe.—Ed. *B.B.J.*]

BEE TENT ENGAGEMENTS.

BRITISH BEE-KEEPERS' ASSOCIATION.

June 30.—Farningham Rose Show.
July 1.—Tiverton Horticultural Show.
July 12–16.—Royal Agricultural Show at Carlisle.
July 21.—Southborough Flower Show.
July 27–August 2.—Kensington Show.
Aug. 11, 12.—Surrey County Show.
Aug. 18, 19.—Shropshire County Show.
Aug. 24.—Long Buckby Horticultural Show.
Sept. 3.—Devon and Exeter County Show.

HERTFORDSHIRE COUNTY ASSOCIATION.

July 7.—Herts Agricultural Show at Hatfield.
Aug. 5.—Frogmore Cottage Garden Show.
Aug. 27.—Much Hadham Cottage Garden Show.
Sept. 2.—Harpenden Horticultural Show.
Sept. 8, 9.—Hertfordshire County Bee-keepers' Show.

TOUR IN IRELAND.

Aug. 10.—Royal Agricultural Show in Clonmel.
Aug.—Maryborough County Agricultural Show. (Date not fixed.)
Sept. 3.—Newtownhards Flower Show. Near Belfast.
Sept.—Royal Horticultural Show at Dublin. First week in September.

BEE AND HONEY SHOWS FIXED FOR 1880.

July 1.—Tiverton. Devon and Exeter.
July 27, 28, 29, 30, 31, and August 2.—South Kensington. British Bee-keepers'.
July 27, 28, 29, and 30.—Caledonian Apiarian and Entomological Society's Show at Highland and Agricultural Society's Meeting, Kelso.
Aug. 5.—West Kent.
Aug. 11, 12.—Surrey County.
Aug. 18, 19.—Shropshire County.
Aug. 25.—East Scotland. Arbroath.
Sept. 2.—Exeter. Devon and Exeter.
Sept. 3.—Central Training College. Exeter.
Sept. 8, 9.—Herts County, at St. Albans.
Sept. 9. 10.—Herts County.

THE FARMER'S SOLILOQUY.

To Bee or not to Bee,—that is the question—
Whether 'tis nobler in the main to suffer
The Stings and (H)arrows of outrageous fortune,
Or to take arms against o'erwhelming troubles,
And by bee-keeping end them? The bees to keep,
Far more; and by our bees assuage or end
The heartache and the cumulative shocks
That farming's heir to,—'tis a consummation
Devoutly to be wished. The bees to keep,
To keep, and wealth achieve—ay, there's the rub!

SHAKESPEARE, *with variations.*

Correspondence.

*** *These columns are open to Subscribers, so that their queries, replies, correspondence, and experiences, may be* fully *and* faithfully *recorded; and for the discussion of all theories and systems in Bee-culture, and of the relative merits of all hives and appurtenances, that the truth regarding them may be ascertained. The Editor, therefore, must not be expected to coincide with all the views expressed by the various writers. All Correspondence is addressed to the Editor.*

APIARIAN LIBRARY.

In last month's *Journal* I notice a slip of the pen or a misprint which, if not pointed out, may cause some misapprehension.

In your reference on p. 239 to the Apiarian Library the British Bee-keepers' Association is forming, an appeal to the members for donations *for* books is mentioned. Any subscription that we may receive towards the Library Fund will be most welcome, but it is donations *of* books that we solicit. Any books or pamphlets, ancient or modern, in good or bad condition, will be most acceptable, and may be sent either to the Rev. H. R. Peel or to myself.

Every accommodation has been afforded us by the Royal Society for the Prevention of Cruelty to Animals; and if our members will only take the matter up warmly, we shall soon be in possession of a library worthy of our Association and our cause. I trust each reader of the *Journal* will send us one book at least. All contributions will be duly acknowledged.—J. P. Jackson. *Brigadier Hill, Enfield, April* 20, 1880.

FLORAL AND BEE GOLD.

These are distinct from each other. The sample in which Mr. Hunter could find no trace of gold was precipitated gold, and should have been expelled. Floral gold was never submitted by me to the assayers, and the flower from which I obtained it shall in due season be forwarded to you. I should indeed have been the vainest of men had I asserted that bees' wax was rich in gold without submitting samples to three independent assayers. I have asked them by this post to repeat their assay. Meanwhile, I am showing a firm of refiners of precious metals how to extract it from the wax, which last will be found after all to be only 'pitch.'—James Bruce, *8th April*, 1880.

[This came with a request that it might be forwarded to Mr. Hunter, who writes, 'Had gold been present in any form in the sample I had, it must have been revealed.' Mr. Bruce must send us full corroborative evidence of the alleged discovery if he wishes further notice of in it these columns.—Ed.]

ARE BEES A NUISANCE?

Referring to the paragraph in this month's *B. B. J.* it is a nuisance if life be made uncomfortable by the apprehension of danger, and I take it that the distance between the hives and the gentleman's garden in question renders it quite possible for the

bees belonging to them to sting him; in which case it would not be necessary for him to prove that it was one of them that actually did so. As far as I know there are no precedents to go upon, but I am of opinion that the complainant has a *prima facie* ground of action.—R. W. PARTRIDGE, 10 *Coningham Road, Uxbridge Road, April* 7, 1880.

INTRODUCING QUEENS.

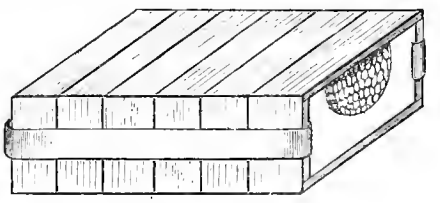
From one cause or another I have lost four stocks since last September, but the eight I have left appear very healthy and in good condition, which, I am pleased to say, include the three stocks headed by the Ligurian queens I had from you in the autumn, and which are now rapidly increasing in population, the young bees being very finely marked. I mean the colouring is good, for I find that this often varies considerably in the progeny of different queens, although pure breed and imported. I have introduced alien queens to stocks in the autumn nearly every year since 1872 and never use cages. I will not say that I have been entirely without a failure, but I find that those who use cages are not universally successful, and I do not think any failure I have had would have been avoided if a cage had been used. I rely on the assertion of Huber that the bees will accept a new sovereign if twenty or twenty-four hours are allowed to elapse after removing the old one before she is introduced. I therefore remove the old queen, and on the evening of the next day following her removal I place a bell-glass on the centre of the crown of the hive, having first driven the bees down with a little smoke, and having smeared the alien queen with a little honey or syrup, I place her under the glass, and the bees soon come up and receive her with a loud hum of joy; in fact, they seem as if they would go mad. I then cover them up for the night, and remove the glass at a future time. As I do my Ligurianizing in September, the rejection of the alien queen unnoticed by me could not fail to betray itself in the spring, as it would be too late in the season for the bees to raise another fertile queen. I was much interested in Mr. Raynor's paper, published in the February number of the *Journal*, which, amongst other interesting matter, alludes to the subject of introducing alien queens, for I have often thought the operation is made more complex than it need be. —JOHN ENOCK, *Sibford, near Banbury.*

BEE-FLORA.

I intend giving myself the pleasure of a visit to your establishment first opportunity, as I see it is free to subscribers to *B. B. Journal*, and will bring some seedlings of a curious plant, which blows early in February and continues in bloom until after crocuses have started. I have never been able to find out name of same, although I have asked several gardeners. It is earlier and hardier than any of the other early flowers now grown for first crop of bee fodder; and as I consider that natural pollen is more inducive to bees than artificial (although your recommendations on this point are excellent), I think if more extensively grown it would prove a great help to early stimulative feeding. I have seen it come into bloom as the Christmas rose was fading.—JAS. JANES, JUN., *Cowley's Road, Uxbridge.*

SEPARATORS FOR SECTIONS.

In the matter of separators (page 236, vol. vii.): Are they necessary? and if so, what is the objection to strips of thin glass? Surely it would come cheap enough, can be easily cleaned, and as long as unbroken could be used over and over again. I have a plan in use (which answers admirably, and as I have not seen it elsewhere, I suppose it is new, although it may not be so) for securing a set of sections perfectly and yet easily detachable in a moment, viz. a piece of tin about $1\frac{1}{2}$ inches broad, and about $\frac{1}{2}$ inch longer than the number of sections to be fastened together, the extra length at either



end is turned round a pair of round-end pliers, which then clips the sections. Two pieces of tin are required for each set of sections.—W. WALKER, JUN., *North Devon.*

PAPER FELT.

I am pleased to see in your *Journal* paper felt mentioned as a good protection for hives. I can confirm the remarks of Mr. Godfrey, for most of my hives were completely covered with this in November, and during the severe frosts and snow-storms I am pleased to say my hives have escaped destruction, they are now in a very healthy state. The felt keeps them warm and dry. I think it is of great value to bee-keepers, and so cheap, too, costing only about 20*s.* per cwt. It can be taken off in the spring, and a fresh lot put on in the autumn, with a very small cost, when preparing the hives for the winter.—H. WARREN, *Woolmer Forest Apiary, Liphook, Hants.*

ANTS IN HIVES.

It is generally understood that preventing is better than curing; to follow the above I have hit upon a plan to prevent the ants, earwigs, &c., from crawling into bee-hives, and I hope it will be beneficial to many bee-keepers, who like to try it. Take four stout nails, $2\frac{1}{2}$ or 3 in. long, and put them into the legs of the stands endways, so that they project about $1\frac{1}{2}$ or 2 in.; take four garden-pot saucers, fill them with water, and place the stand in them, and no vermin will be able to crawl up the legs into the hive, and the nails will keep the ends of the legs out of the water.—A. NEUBERT, *Reigate.*

[The above will answer well as regards wingless ants; but earwigs can fly, and cannot be so easily kept from the hive.—ED.]

WINTER BREEDING.—GREAT MORTALITY OF YOUNG BEES.

As all ideas pertaining to bee-culture are of value, I venture to give you an item of last winter's experience. First I wintered my bees by casing the hives in outer boxes and the intervening space filled up with saw-dust, and about two inches over the top; then a ∧ shaped roof. Sawdust is an excellent non-conductor of heat, and useful to keep out the cold. As an illustration of what I wish to convey, I will confine my remarks to two stock-hives from out of others, all treated with saw-dust packing. No. 1. The best hive in my apiary was, in Oct. 1879, requeened with an Italian from Messrs. Abbott, and at the time little or no brood was in the hive; plenty of pollen and sealed honey-comb (*i.e.*, sugar syrup), all the honey having been extracted in September. The queen, a very fine one, must have at once commenced to deposit eggs, for in due time young Italians began to appear, and at such a rate did they hatch out that before Christmas the Ligurians were at the entrance six to one. At that time some correspondence was going on in the *Journal* about winter breeding and feeding with artificial pollen (pea-meal), various views being tendered. During the snow storms I was greatly surprised to see, in front of the hive, and for the space of two or three yards, several young Italian bees. This at first looked strange, as the accepted theory is that it is the young bees that survive the winter; by-and-by they became so numerous that I began to be seriously alarmed for the healthiness and safety of my hive, and determined at all hazards to make an examination as soon as possible. The opportunity came; and with a warm fit of sunshine, when all were out for a flight, I took off the covers, and out with the frames. Everything appeared all right, not a sign of foul brood or any fault whatever. There was plenty of stores and young brood in all stages of development inside of the hive. There was abundance of black bees, and plenty of young Italians. I closed up the hive, hoping for an improvement, and awaited events. Another severe snow-storm came, and just as before the ground was strewed with yellow-jackets, not a dead black to be seen. The entrances of all the hives were shaded from the light. Another fit of sunshine and warmth and bees were out for a flight, and I took the opportunity to again examine this hive. Things were just as before, breeding going on vigorously. Knowing the combs which contained pollen by marking them in the autumn, I took them out as well as some sealed combs, and supplied empty combs; breeding ceased immediately, and soon also the mortality. Seeing in the pages of the *Journal* some of the ideas of giving pollen, I just gave them a little. By the way, I may mention how I fed my bees up, and then you will understand how I give my pea-meal. My hives are your Standard, and on the top another empty hive; a small hole through the quilt, not over an inch in diameter, serves for ventilation, and for the bees to come up. Inside of this empty hive is an ordinary dripping-pan, 9 in. by 6. This holds the syrup with a few pieces of comb on top as floats. Bees come and take it down as fast as it is judicious to give it to them. Also the pea-meal is just put away in front of the tin pan; at once they find the meal, and either avoid or take it as they wish. They took it with avidity, and breeding recommenced, and a month after also the mortality. I only let them have three days at the meal, and then took it away.

Stock No. 2. A fine stock in October. In fact those two stocks were chosen as equals, and set apart to try the pure Ligurians and blacks together. Well, the blacks were nearly torpid all winter, and are now going to work in proper style: breeding freely, and altogether a strong stock. In contrast the Italian is very weak; scarcely an Italian to be seen. No breeding going on, and I, a few days ago, contracted their hive to five frames, and the black stock is in twelve frames. Now the problem is, do young bees require a cleansing flight, and thus perish with cold, for you see on the flight-board the Italians were six to one, and all the old black bees remaining inside? Or is sugar-syrup improper to raise brood upon? I incline to the former opinion, as the No. 2 stock was fed upon the same as No. 1, and it is in a first-class healthy condition. And as a further support of this supposition, after the mortality ceased a little artificial pollen recommenced the evil. So that I have no doubt nature is the best adviser, and that a slack season is the best in winter for both man, and beast, and insect. Hoping for a successful year in bee-culture.—W. Crisp, *Chester le Street, April* 12, 1880.

[The youth of the queen, the excitement of the journey, being joined to a strong stock after being used to a nucleus, and the feeding, doubtless excited the breeding propensity at an unseasonable date. Young bees are the nurse-bees, and the preparation of bee-pap in their stomachs rendered cleansing flight occasionally necessary, and to this much of the mischief is probably due. There must have been great mortality amongst the blacks in the hive in question at some time in the autumn, or where are they? Probably the young blacks died of exertion in providing for the early broods of Ligurians, as the latter did in nursing those which came after.—Ed.]

DEAD BEES AT ENTRANCES.

For some time, now and then, we have noticed dead bees, many times from six to eight, at the entrances to our hives, both boxes and straw-skeps: and the circumstance has been to us so inexplicable that I venture to ask what you deem to be the cause of it. We have five hives, and have noticed dead bees at the entrance of them all. And, notwithstanding the loss that has occurred in this way, we are still able to notice indications of considerable strength in all the hives, which induce hopes that they may survive the winter. I must mention that we gave them last autumn about 100 lbs. of sugar made into syrup, so that their dying cannot presumably be attributed to want of food. I hope you will be able to shed some explanatory light upon the matter.—J. R., *Wigton.*

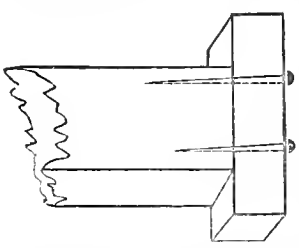
[The appearance of a few dead bees on the alighting-board is not necessarily an unhealthy sign, as amongst many bees some must die naturally every day. If the

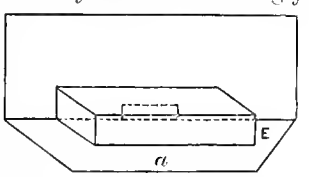
weather permitted, the surviving bees would carry them away and drop them at a distance, and probably their death would not be suspected. During the period of activity, bees in prosperous colonies are hatched into life at an average rate of about two thousand per day for several weeks successively; and many such hives, notwithstanding the immense number of births, do not swarm, but spend their strength in breeding, building comb, and storing honey and pollen, yet at the end of the season the great increase will have spent itself, and the hive will go into winter quarters in about the usual condition. In the meantime there will have been, perhaps, a quarter of a million bees that, having played their part, will have died and left no sign. What a pile they would have made had they accumulated about the entrance, the heap would have been as large as from ten to fifteen average swarms: it does not seem possible, but it is a fact!—Ed.]

WAX-GUIDES FOR FRAMES.—FRAME-ENDS.—ENTRANCE-SCREEN.—EXTRACTOR.

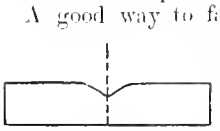
Last summer, if you remember, I showed you my wax-guide for cottagers, made by dipping string into melted wax. I have now greatly improved on that. I take pieces of paper, about the texture of stout cream-laid note, cut them the required size, and dip them rather quickly, but evenly, in melted wax, holding them until set, and then laying them on a flat, smooth board; I have then a first-class wax-guide which will not easily break: one or two dippings may be necessary, according to the heat of the wax. The cooler the wax the thicker coating you will get.

My frame-ends I now make like the enclosed drawing. I find them easier to make, and the frames fit better in the slinger. I also enclose sketch of a contrivance, which if placed in front of the hive entrance in autumn and winter, has the advantage of lessening robbing, preventing draught, and sunlight during cold weather. The bees find no difficulty in entering, and a robber has to pass down the corridor, in which he will probably encounter many bees who strongly object to his company. The dotted lines show hive-entrance. E is the entrance to the corridor, *a* is the alighting-board. It is made of three pieces of thin wood—2, 1½ in. × 1in., and 1, 1½ in. square for one end. It may be fixed by two pins, or by putting a stone on the top.





A good way to fasten foundation so as to prevent its falling, is to cut the frame through at the top, and then made a groove at the top to run the wax along. The dotted line is the foundation. It rather weakens the middle of the frame, but the wax-sheet cannot drop. Thick packing-paper makes good top layers of quilt.—H. Parson, *The Firs, Guildford.*



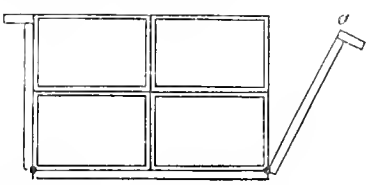
[We are also favoured with a sketch of an Extractor, in which the combs are laid in a tin receiver, similar to that of our Little Wonder, and is made by gearing to revolve on a horizontal axis. This produces an irregular motion, and the pressure of the honey on the comb is uneven, so that it is not so commendable in principle as those in which the revolving shaft is perpendicular.—Ed.]

DO BEES EAT POLLEN?

I don't think they do! Mine had none to eat during the winter, and such of them as are saved from foul brood are quite healthy. Neither will they eat artificial pollen given in the shape of flour in a sugar-cake. They eat the sugar—part of it, but the flour is found on the floor-board. So, as a matter of course, I take it for granted they don't want it. I may also state that in two hives I had a hatch of brood in October (from sugar-built combs), without any pollen. At the present date, none of my hives are breeding yet, and I fear young bees will be scarce this spring. Hives will require good attention to keep them alive.—A. Cockburn, *Cairnie.*

SECTION FRAMES.

The wide frames I alluded to as Mr. Cheshire's are described in *Journal of Horticulture* for Feb. 5th. The wide frames sent out by you are very well made, also the sections, hence with a little trouble they fit well; but after bees have built comb and propolised heavily, it becomes a very difficult matter to take the sections out again quickly with the new tender comb and bees on, to put as supers proper over brood nest. The advantage of the section-frame is to get comb built in sections at the side of the brood-nest, to be afterwards put above, and hence it is a great object to arrive at easy and speedy removal of sections. Mr. Cheshire, therefore, proposes the wide frame (if so it may be called) to hinge at bottom corner, and without top



bar; Separators are thus easily arranged, and sections easily removed, and the weight of the sections, &c., keeps the frame in its place. I have sawn through the top bar of the wide frames supplied by you, and think this will to a certain extent obviate the objection and have no other bad effect.—F. W. S., *Chesterfield.*

[The above arrangement is a modification of the Woodbury compound frame, designed by the late Mr. Woodbury, to permit the super bars, as then used, to be utilised in the stock hive, and *vice versâ* when clean combs were built upon them. It was found, however, that the weight of the frame's contents caused the knuckles of the frame, *a*, to give, and they became practically useless. A similar

result will occur with the present arrangement, unless the knuckle or hanging piece be lengthened so as to project on to the sections, an improvement practically carried into effect by the method our correspondent has adopted. Our 'section frames,' as at first arranged, were composed of sections only, and required to be cut to form separate sections; but they have been 'improved' to utilise and hold together the slight Yankee productions until they have become a nuisance and have caused an immense waste of ingenuity.—Ed.]

CURE FOR BEE AND WASP STINGS.

In looking over some old *Exchange and Marts* last week I came across the following:—'It cannot be too generally known that the juice of a bruised onion is a remedy for bee-stings I have never known to fail. I once knew a person stung in the throat by swallowing a wasp in beer, and chewing and swallowing a piece of an onion removed the dangerous swelling and pain.'—H. F., *Reading.*

LIGURIAN BEES IN AUSTRALIA.

Will brother readers kindly inform me through your *Journal*, whether any one ever sent Ligurian bees to Australia? if so, to whom, or to what part? If not, would it be practicable to forward some by the Torres Straits mail boats, with any chance of success?—L. E. R., *Alderley Edge.*

[We do not know of Ligurian bees having been sent to Australia; certainly we have not sent any, nor do we know what would be the probable cost of sending them.—Ed.]

FREAKS OF BEES.

Can any of your readers throw any light on the following curious circumstances that occurred recently in connexion with one of my stocks?—

About the first week in March I found the bees in a good and healthy stock, with some amount of sealed brood. Later on I was quite satisfied that young bees were matured. About the 10th of April, upon examining the hive, I found the bees in an excited state, and the brood-cells torn open, with the 'nymphs' exposed. The circumstances being a puzzle to me, I felt that I could only wait and watch events. I therefore a few days later examined the hive, and found that breeding was entirely suspended, although I distinctly saw the queen, who was apparently in a healthy condition. On the 17th April the queen issued with about two-thirds of the number of bees. They were duly hived, but forsaking their new abode, chose an empty hive, and have since conducted themselves in an ordinary manner. It is now six days since they swarmed (?): but there are no signs of breeding on their part, or on that of the stock-hive whence they issued. I have therefore deprived another stock of one comb containing brood in different stages to-day, and given it to the latter in the hope that they may be able to raise a queen.

I would state that they are thoroughly supplied with food, but until recently pollen has been very scarce. I would also say that there are no drones in the apiary.

There has been great mortality among the cottagers' hives, and unless it were for the introduction of the improved system the precious little workers would have been nigh extinct. The plum blossom is now simply magnificent, and it is very sad to think such a splendid opportunity can be only partly used.—J. Garratt, *Hockendon, St. Mary's Cray, April 23, 1880.*

Echoes from the Hives.

Nottingham, March 29, 1880.—'March has up to this day been a splendid month here. We have bright warm sunshine every day, though the nights are still chilly. March 4th was the first day our bees were noticed bearing pollen, and since then they have been at work every day. The purple crocus is now in full bloom in the fields, and the spring flowers and flowering shrubs in the garden afford plenty of pollen, and possibly some honey during the sunny mid-day hours. The season promises to be very favourable so far.—W. S.'

Horsham Vicarage, April 3.—'I put up seven boxes for wintering, fed well during autumn, found all of them strong in February, and last month they were unusually "busy." It is a treat to see them at work to-day. I still feed gently every other day. Nineteen out of twenty of our cottagers have lost all their bees.—J. W. H.'

Battle, Sussex, April 15th.—'The bees about here seem in a very bad state, eight hives out of ten having died, except those belonging to a few persons who have taken the trouble to feed. Some do not intend keeping bees any longer if they lose what they have. I had nine in the autumn, one died during the early spring of queenlessness. The remaining eight are strong and thriving, and work hard whenever they get the chance.—J. W. H.'

Moving Bees.—'I have lately removed from Cumberland to Sussex, almost from the extreme north to the extreme south, and, of course, I could not leave my favourites, the bees, behind me. They bore the journey splendidly, and now are working in their new home as zealously as they did in their old. I fastened them in very securely, putting perforated zinc against the entrances of the hives, a crown-board screwed down on the top, with a hole for ventilation covered with perforated zinc: and the frames, at least all the centre ones, well secured, so as not to shift from their places. The railway guards took great interest in them, handling the hives gently, and putting them into parts of their vans where they were least likely to be disturbed. My bees, of course, gave me hardly any honey last year, but I sent them to the moors in the autumn, and there they gathered sufficient honey to last them well through the winter. They are now very strong, and they have conclusively proved the superiority of the new-fashioned method of management to the old, for my neighbours in the north, who adhered to the old method, lost all their bees during the past winter, whilst I lost none.—An Amateur, *April 12th.*'

Baldovie.—'Terribly cold weather. The first two weeks of March we had exceptionally fine weather: everything offered well in favour of bees and bee-keepers. The crocuses well blown, and pea-meal taken freely from them and the shaving-basket almost every day: but alas! at a rare interval, for the scene has been entirely altered for the last three or four weeks, very little sunshine with very cold east wind, and I may say almost continuous rain. The gooseberries are in full blossom hereabout, but no chance for the bees to get at them as long as this weather continues. The first humble queen I saw this season was on the 8th March, but have seen very few since. The first and only queen-wasp was on the 1st April, and I took her prisoner. Breeding is going on fairish, but not with the same spirit as if the weather had been genial: but I hope it will take a change for the better ere long. If we get another season like last, sugar is bound to rise still more in price.—D. Ramsay, *16th April.*'

Southwell, April 20.—'I have wintered fourteen hives out of eighteen, having thus lost four, one of them being queenless. I am the only one in the parish of Southwell that has any bees left: they have all paid the penalty of letting them alone. I have given my bees at least

2 cwt. of sugar during last autumn and this spring; but I am well repaid for my trouble and expense. My bees have lived entirely on sugar syrup during the winter, as most of my hives were entirely honeyless; so bad was last season, that had I not fed liberally I should not have had one stock left. I trust the coming season will cheer us all up.'—S. S.

Warwick, April 21.—A Caution on Removing Bees Short Distances.—'I was obliged to remove my bees at Lady day, and as the distance was not far, and unfortunately for them the day following was about the brightest day we have had, causing a serious loss to some of them through their flying back, otherwise they wintered tolerably well, and no loss of stocks.'—G. F. P.

Frampton, Boston, Lincolnshire.—'My fourteen stocks of bees appear strong and in a good and healthy condition, ready and willing to work at sunshine amongst my crocuses and white arabis, of which I have a good plot, each of which appears very acceptable to them. We have had a fairly good March for bees—dry up to last week. April comes in rainy, and prevents the bees foraging at present, but they are ready to migrate in search of food as soon as sunshine may appear. In hopes of having a better harvest of honey in future.'—Jas. Lighton.

Shifnal.—'Thanks for information derived from your *Bee Journal*. My three stocks of bees are all now breeding nicely, owing, without doubt to following the advice given by you.—*in re* feeding. The "grandmother's" plan has not answered well in this neighbourhood during the last twelve months, as I have not any hesitation in saying that from eighty to ninety per cent. kept and treated on that system are now defunct.'—M.R.C.V.S.

Harrogate.—'I have one stock left in the wooden hive obtained from you. A few are left in a straw hive. I was speaking yesterday to the man from whom I bought my first lot three years ago, and he says he has lost nine hives this winter: in fact, he has not one left, and the same is the case with others round about. My bees were busy during the fine part of the last few days, bringing in whatever they could find.'—H. P. J.

Bodmin.—'Bees in these parts will be rare this season, few stocks having survived this unusually cold winter. Last autumn there was little or no honey, and as few fed their bees, the result is not to be wondered at. One man with seventeen stocks last autumn has four weak ones this spring; and he is better off than many of his neighbours. My own, I am glad to say, are doing well; and already I have found that there is a good supply of young bees. Spring flowers—crocus, gorse, snowdrops, &c., are plentiful, and the bees are hard at work at them.'—F. C. G.

Dumfries, N.B.—'I have the pleasure to state that my bees (eight stocks) are all in very good condition at this season, and promise an early increase. The queens began to deposit eggs in the cells at the beginning of February, and on the 5th and 7th I noticed workers coming in with white pollen. The number so working is increasing every fine day. In order if possible to secure the combs against damp or mould during winter, I placed each hive on an eke, about three inches deep, at the close of October; and it seems to me the care is likely to be well rewarded, as they are quite clean and free from disease of any kind. They are also all very populous, several almost bursting with bees—thanks to a liberal supply of sugar syrup, from 21st June till 8th August last year, and to slow feeding till the close of October. I obtained two swarms of pure Ligurians in June last year, which did as well as bees could be expected to do in such a bad season, and with a good year to come, as is forecast by some, they will well repay me. I have heard of great mortality and the loss of stocks in this neighbourhood, but chiefly where the let-alone principle—the most common in this country—prevails. Hoping we shall reap one hundred fold this year to repay what we sowed in 1879.'—John Hume.

Vid Canterbury.—'I wish to discontinue taking the *Bee Journal* (at any rate for the present). I have spent many pounds on the bees, to say nothing about the hours each day given to their attention, and now I have only twelve hives left. It may be all very nice for correspondents to say they don't lose any of their bees, but if I do not read any publication on this subject for a time I shall not be annoyed from that source. I am giving each hive ¾ lb. food per week. I have thirty large American currant trees which have been in full blossom, besides double that number of gooseberry well stocked for fruit, and my garden is white with plum, cherry, and other blossoms—yet I have lost three hives within this last week. I examined one of them last evening, and found worker brood in every stage, with some pollen at places in the hive. If this state of things goes on much longer, there will not be a bee in this district.'—A. F.

[Losing three hives within a week during such lovely spring weather does not evidence the close daily attention reported in the foregoing. With brood in all stages, stocks ought not to be allowed to slip through one's fingers; and had they been really attended to they could not have been lost. The reason given for discontinuing the *Journal* appears somewhat singular.—Ed.]

'There is a village twelve miles from here, where all the bees are dead this winter. I heard of none being dead in this district. Thanks to your *Journal*, for I send it to most of the bee-keepers round here to read it. We lost most of the bees in this district in the winter of 1877.—Sidney Roebuck, *7 Halidays Park, Selkirk, N. B.*'

Retford.—'It is, I believe, usually asserted that bees gather only one description of pollen on the same journey. To-day I noticed a bee returning to her hive having on each thigh two balls of pollen of different colours. Is not this very uncommon?'—T. B. G.

Horsham.—'This is indeed a splendid spring for bees. I have furnished some of the cottagers in this neighbourhood with bees, as they have lost nearly every hive round about here, and I think I shall have to start many more, as they have not the capital to purchase bees, so I intend to increase my stocks as much as I can. Mespilus Canadense is in full bloom, and the bees are very busy on it.'—T. W. C.

Queries and Replies.

Query No. 334.—*Artificial Swarming. The Thermometer.*—There is always some risk attending the operation of artificial swarming with closed hives, but I think the following methods, which, I believe, are new, would reduce the chance of failure to a minimum. I should be glad of your opinion as to which way would be most likely to succeed.

(1.) In fine, settled weather stop up the hole of a stock at night with perforated zinc. Next day, if fine, drive all the bees into an empty hive, and move it to a distance, putting the old hive on the old stand. I think sufficient bees would soon go back to stock the old hive. The chief risk would be that the brood might be chilled before the bees went back, and those that returned would be chiefly old ones, and, according to your theory, might not raise a queen, but there would be the advantage of most of the drones going back. If the swarm is found to be too light at night, change it with the old stock.

(2.) In the middle of a fine day, when the bees are flying, drive all the bees from a stock and move them to a distance, putting the stock on the old stand to receive the flying bees. There will not be many bees in the swarm, as some will leave it, but at night change it with the stock. The swarm would have both old and young

bees, as in natural swarming, and the old hive would probably not swarm again.

(3.) As a sign of swarming, I think more use might be made of the thermometer, if Nutt's statements be correct. He says that the normal temperature of a prosperous hive is about 80 degrees, but that before swarming it rises to 100 degrees and upwards. If this be so it would be a useful indication of the time when a stock requires more room to prevent swarming; and, on the other hand, it would be a great relief for a business man to know that he need not fear a swarm leaving in his absence, if the temperature were below that point. If any of your subscribers could give statistics on this point, I think it would be of much use. About eight or nine at night would be a good time to take observations, as the bees would be all at home, and the heat of the sun would not influence the hive.

Lastly, I shall be obliged if you can tell me which of your sectional supers are best suited to a Stewarton hive? whether it is not necessary to separate the boxes of a Renfrewshire Stewarton in order to find the queen? and if the wired flat foundation will compel the bees to build worker comb?—Delta, *Yorks.*

Reply to Query No. 334.—(1.) There would not be any risk in artificial swarming if those essaying it would follow the lead we have so often given. A hive to be swarmed should be in swarming condition, *i. e.* there should be a large surplus population, plenty of worker brood, a fair supply of honey within and without, and fine weather. Stopping up the entrance of a hive in swarming condition for a night would probably cause suffocating heat, and the collapse of the combs through the frantic efforts of the bees to get out. Putting the old hive on the old stand would ruin the swarm, as the chief of the bees would desert it and go back. If the weather were fine the brood would not be injured by an hour's desertion, and if the hive were in swarming condition young bees would be hatching out at the rate of near 2000 per day, so queen-raising would soon be commenced. The drones would go back of their own accord when they found they were unwelcome in the hive with the swarm. Changing places—hive with swarm—would be but a sorry corrective to an ill-arranged operation.

(2.) The objection to proceeding as per No. 2 lies in the fact that after the swarm (consisting of *all* the bees) had been taken out, the old stock hive, though replaced on its stand, would at evening have no bees in it but the *flying* bees, and the young ones that had hatched during the afternoon; and next day those that had flown would fly again and join the swarm on the old stand as you suggest. There would then be less than a full day's hatch of young bees left in the old stock, and though they might (in fine weather) hatch out the brood and raise a queen, we agree that they would not be likely to swarm again in the same season.

(3.) If the rise in temperature were gradual, as is the increase of bees, and the maximum insured the issuing forth of a swarm, a thermometer would be a sure guide; but ordinarily, when a hive gets too hot the bees go into the verandah, or elsewhere outside, if they are not confined as suggested in the first query. The rise of temperature alluded to is consequent on the determination to swarm, when instead of going out to work the bees rush in thousands to the honey cells to load themselves with honey, the whole proceeding often lasting not more than an hour. At night, when in swarming condition, the bees, though at home, are often 'lounging' outside to prevent high temperature, so the thermometer would be of little use as an indicator at that time.

All sectional supers are as applicable to a Stewarton hive as to any other, but it may be more convenient to use a square adapting-board than to place them on the octagon-shaped hive. Sections, 6 inches by 2, and 4 or 5 inches high would come in nicely, but they can be made of any size or shape. It is often necessary to remove upper sections of a Stewarton or other storifying hive to enable one to capture a queen, and this is by many held to be an objection to their use. Foundation worker-comb will not *compel* the bees to build worker cells if they need drones, but otherwise they are almost sure to do so.—Ed.

Query No. 335.—1. How am I to avoid crushing bees in closing the observatory hive I purchased from Abbott Bros? The bees run all over the wood-work, and in shutting the door many are sacrificed. 2. One of my stocks died recently, and on examination I found some brood in worker-cells capped like drone-cells, a queen with a moderate quantity of workers, some queen-cells, one of them sealed, in which was a queen. Am I right in concluding that the original queen had died in the winter, and that the new one was only a drone-producer? 3. In spite of the severity of the winter, I find that my stocks in your Makeshift hives standing in the open are stronger than my other stocks which are in a bee-house, and in other respects in a much more sheltered position. Does not this go far to prove that neither double walls nor even thick walls are necessary in this country? 4. Seeing that the bees, at a great cost of time and labour, most carefully propolise the quilt at the beginning of the breeding season, and thus make it no longer serviceable for carrying off the vapours of the hive, would it not be advisable to remove it then, and substitute crown-boards until the time for supering, retaining the quilt in the autumn and winter?—T. B. G.

Reply to Query No. 335.—1. When it is necessary to open the observatory door, which ought to be very seldom, a little care is required on closing it. In doing this we place a slip of wood a full eighth of an inch thick (a thin pencil will do) in the joint, near the hinged part, at top and bottom, and gradually slide them towards the other side of the observatory, closing the door upon them as they are moved. By doing this no bees can get in the crack between the 'pencils' and the hinged side, and the bees will be pushed out of the way as the pencils are moved, and the door can be finally closed without hurting a bee. 2. The reason suggested is a highly probable one; we presume the queen found in the cell was a dead one. Drones in queen-cells do not come to maturity, and the bees often do not unseal them for many days; the queen never. 3. Our theory on thin *versus* thick walls is that if there is an empty comb next inside the hive wall, the thin wall is as good as the thick one, to say the least of it. 4. Unless the crown-board were kept a quarter of an inch above the frames, the bees would propolise it worse than they do the quilt, and if it be so kept up the loss of heat from the brood-nest would be very great. The quilt appears to be the lesser evil.—Ed.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Second-hand Hives.—So long ago as September, 1873, *vide Journal*, we cautioned readers against the use of second-hand hives as follows:—'Second-hand hives are useful as patterns, but we should be sorry to place bees in one unless we had either boiled or baked it to insure the destruction of vermin and the germs of all disease;' and we have not altered our opinion of the danger attending their promiscuous use. Thoroughly cleansed and disinfected, second-hand hives are as good as new ones as far as the bees are concerned, and being a drug in the market, they may be had for a mere song. This was practically proved at the sale (?) which took place here a short time since when 25*s.* hives realised 5*s.* each: and many of equal value originally found no bidders at all.

Exchange Column.—Want of time and space prevent our opening an Exchange Column in these pages. Those who need such accommodation should apply to the obliging Editors of the *Bazaar, Exchange and Mart*, 32 Wellington Street, Strand, whose charges are very moderate, and the arrangements perfect.

SUBSCRIBERS' COLUMN.

To meet the wants of Subscribers who require a cheap mode of advertising their wants, we have opened an Advertising Column, for non-trading Subscribers only, wherein they may make their wants or wishes known at the rate of One Penny for every six words, or part of six words, but no advertisement must contain more than thirty-six words.

Stamps to accompany in all cases, and there can be no reduction for repetitions.

FOR SALE.—Vol. III. of *British Bee Journal*, complete. Unbound, 4*s*. Letters to Editor.

LANGSTROTH on 'The Hive and Honey Bee.' 9*s*. Free. Letters to the Editor. fo. 101

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FOR SALE.—Nos. 2, 3, 4, 8, and 10, of *B. B. Journal*, 1*s*. each. Apply to the Editor. fo. 104

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SEND Two Stamps for Abbott Bros'. Catalogue. Southall, Middlesex.

PRIME Swarms of British and Hybrid Bees for Spring delivery, at 18*s*. 2*s*. returned if the box be returned. Address GEO. REYNOLDS, St. Mary's Street, Eynesbury, St. Neots. fo. 43

FOR SALE.—Two Stewarton Hives: one square, four body-boxes, and one octagon, three body-boxes; all complete, with supers, floor-boards, slides, &c. Been once used. Price, half cost—square, 12*s*. 6*d*.; octagon, 16*s*. Forfarshire. Letters to Editor. fo 42

SPLENDID cane-worked new straw Hives, flat top, straight up at sides, lathe-turned centre supering-hole, thick oak hoop at bottom. A first-class hive. Price, only 3*s*. 6*d*. each. Write to ISAIAH GADD, Wokingham, Berks. fo. 14

WANTED, soon, a strong swarm of Bees in exchange for a new set of the 'Italian Anatomy of the Bee,' value 21*s*. Address Mr. CAMASCHELLA, 10 Derby Villas, Forest Hill.

TO be sold cheap, thoroughly well-made, double-walled Cottage Hives, complete; also Abbott's Little Wonder, and several pure Italian Queens. Apply to J. CAMASCHELLA, 10 Derby Villas, Forest Hill.

COTTAGE Bar-frame and Flat-top Straw Hives (new and nearly new). Send stamp for list. SAMUEL SIMMINS, Crawley, Sussex.

DRY PUFF BALL, for fumigating Bees. Will render them perfectly harmless to the comfort of the most timid. 1*s*. per packet. F. S. CLUTTEN, Fressingfield, Harleston, Norfolk. fo. 32

FOR SALE.—12 flat-topped Straw Hives, second hand, 10*s*.; 12 Wire-feeders and Glasses, 3*s*. 6*d*.; 12 Floor-boards, 6*s*.; 4 Supers, 1*s*.; 6 Adapting boards, 5*s*.; 1 Nadir Hive, 2*s*. 6*d*., all bought of Mr. Pagden. 1 Crystal Palace Hive, never been used, 2*l*., stand and glass complete. F. COOPER, Bishopstowe, Lewes, Sussex.

ROYAL FOREST, improved Straw Hive, cane-worked, straight at sides, centre lathe turned, feeding and supering hole, oak hoop at bottom. If you want strong colonies, good swarms, and hives to last many years, try them. Price 3*s*. 9*d*. each, with new pattern, excluder, and quilt. ISAIAH GADD, Wokingham, Berks. fo. 14

STRAW SKEPS, not quite new; also Bell-glass Supers, cheap. ISAIAH GADD, Wokingham, Berks. fo. 14

BEE-KEEPERS.—ARTHUR CLARKE, Esq., Clevedon Villa, Perry Vale, Forest Hill, S.E. Mr. CAMPBELL, Messrs. Carter's Nurseries, Forest Hill, S.E. Mr. DUNN, Undertaker, Cecilia Cottage, near Sidcup. fo. 9

COMB FOUNDATION.—The best American, as per Abbott's Catalogue. RAITT'S FOUNDATION at his prices, from ABBOTT BROS., Fairlawn, Southall, Middlesex.

PRIME BEES' WAX at 1*s*. 9*d*. per lb., in large or small quantities. Address ABBOTT BROS., Fairlawn, Southall.

LIGURIAN BEES.

ABBOTT BROS. supply IMPORTED QUEENS of Purest Strain, in May, at 10*s*. 6*d*. each.

SWARMS of BEES, headed by imported Queens, 42*s*., free on Rail. Ditto, with English Queens, 21*s*. Small Swarms, with imported Queens, for Ligurianising, 25*s*. each. All Queens professedly Ligurian are guaranteed to have been imported. Address Fairlawn, Southall, Middlesex.

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EXPERTS WANTED to accompany the Bee Tent to Horticultural and other Shows, conduct Manipulations, and give short and practical Lectures on the best Methods of Bee Management. Terms: 10*s*. 6*d*. per day, and Third Class Railway fare. Allowance made for necessary expenses.

GLASS HONEY JARS.—First Prize at South Kensington. 1 lb., 15*s*. per gross; 2 lb., 18*s*. per gross, direct from the Works at Birmingham. Address ABBOTT Bros., Southall, Middlesex.

VEGETABLE PARCHMENT for Covering Glasses and Jars of Honey, &c., 2*s*. per lb. Sample Sheet, 4*d*. Prices for larger quotations on application. Letters to EDITOR.

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THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

[No. 86. Vol. VIII.] JUNE, 1880. [Published Monthly.]

Editorial, Notices, &c.

CYPRIAN AND HOLY LAND BEES.

At the last moment we are enabled to report the safe arrival in England of Mr. D. A. Jones with his first shipment of queens from Cyprus and the Holy Land. By a telegram on the 26th we were made aware of the fact, and on the 27th we had the pleasure of welcoming that most enthusiastic and enterprising apiarist at Fairlawn. He brought with him about 150 queens in his new cages; and so well had he provided and cared for them that every one of them is safe, and those that appeared to need a flight will have had it ere this reaches our readers.

His letter, which appears on another page, gives a feeble idea of the troubles he has had, the convictions he has arrived at, and the preparations he has made for supplying Europe and America with the finest races of bees the world produces. He will leave England for Canada about the 4th of this month, but will leave with us a few of the bees of both breeds. Mr. Benton at Larnica is actively employed in raising Cyprian queens for shipment to us, *en route* to America; and having 'flown,' and repacked them, we shall send them forward minus such as may from time to time be ordered for England and the European Continent. Mr. Jones has constituted us sole agents for the United Kingdom, and it will give us much pleasure to distribute his queens amongst our friends.

The enormous expenditure which he has incurred, to say nothing of the personal suffering he has borne, fully evidenced by his altered appearance since we last saw him, but from which, thanks to an 'iron' constitution, he is rapidly recovering, will probably render his enterprise profitless to him in a pecuniary sense for a long time to come, but to him will belong all the honour due to such unexampled skill and personal pluck. To such a man the idea of failure never once occurred; he determined to do what many others have tried to do, and pronounced a comparatively hopeless task, and he has fulfilled his self-imposed mission to the very letter. British bee-keepers have now, therefore, an opportunity of acquiring the coveted Cyprians of undoubted purity; and we shall have the honour of breeding from the first 'Holy Bees' that have ever reached our shores. Mr. Benton, we are glad to say, is quite well and as happy and busy as a bee among newly-blown flowers, and we hope to hear of his continued success.

We make no apology for here stating that single queens of the present importation will be reserved by immediate application—Cyprians, 30*s.*; 'Holy' bees, 3*l.* 3*s.* In quantity hereafter the prices may be had on application to our office.

JUNE.

Notwithstanding the prevalence of the east wind during the past month, the bees have been gradually progressing; and in sheltered situations have thrown off what may fairly be termed 'early swarms,' but in exposed places they are generally not better off than at the end of April. In the early spring-time the genial weather permitted the development of the art of stimulative feeding, and the bees, under careful treatment, were enabled to recover from the effects of a protracted winter; but the cold time which usually visits us about the middle of May came earlier; and the bees in exposed situations received a serious check. The old foragers that had helped in the nursery during the earliest breeding, and had aided in maintaining the heat of the hive as the brood-nest became gradually enlarged, were naturally tempted forth to their pleasant labour by the brilliant sunlight, and in too many instances never returned. Thousands of the all-necessary producers of honey and heat were untimely cut off by the chilling wind; and, as a consequence, the activity which had given such lively evidence of prosperity during April, gave place to listlessness; and the appearance of

dead white grubs on the alighting-board showed but too plainly the effect of their loss upon the hive's economy. The loss of heat-producers when recurring cold rendered their presence more necessary than before, permitted the brood in the outer parts of the nest to become chilled and die; and their bodies were cast forth at the earliest opportunity. And coupled with this, there was the usual effect produced by loss of income; the hungry bees declined to continue the production of labourers, for whom there was apparently no occupation, and, as a matter of fact, destroyed them in their cradles, and threw them out at their leisure. As a consequence of the check which bees have thus received, swarms which appeared imminent at the end of April have been delayed; and supers that were progressing favourably have been deserted, the bees having (as is their wont) carried all the unsealed honey in them into their combs in the hives.

May has been remarkable for the almost total absence of rain. Except on the morning of the 11th, when a slight shower sprinkled the dust, there was not, in our locality, even sufficient to form a dew-drop. On the 20th there was an ominous threatening, but no rain; and the atmosphere continued dry, though the wind had changed to the west, varying a little toward the north.

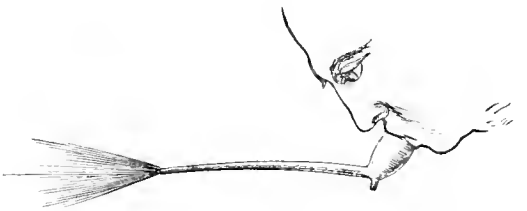
Our neighbourhood, during the month, has been visited by a perfect plague of gnats, said to be foreigners, and certainly of a different race to the old-fashioned weather guides; for their bite is poisonous, and far more irritating in our own experience than the sting of the bee. Bee-poison is evidently no antidote to that of the gnat of the present day, or being thoroughly inoculated with it would give one immunity from the effect of the gnatly probe, which we are painfully aware is not the case. Last year, about this time, we were deploring the dreadful downpour of rain that daily drenched the earth and drowned vegetation; but this year we should esteem a heavy rain a blessing. What creatures of circumstances we are; always complaining,—'always *to be* blest;' yet there is comfort in the thought that whatever the circumstances may be they will surely suit somebody.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

Quieting Bees.—The fear of stings is one of the chief hindrances to bee-culture, yet under proper treatment they are comparatively harmless. They never volunteer an attack, but are extremely sensitive and easily provoked, and when irritated are fierce in their defence of their hive and its belongings. Away from their hive they are as harmless as robins, and unless caught in the dress, entangled in the hair, or subjected to pressure accidental or otherwise, they are unwilling to use their dreaded weapons of defence. Near their homes they are more alive to interference, and unless civilised by the habitual presence of man, are sometimes truculent in the extreme, and ready to sting without apparent provocation. They vary greatly in character in this respect; but all are subject to an ascertained principle, viz. that when gorged with sweets they are not easily offended, and will not show resentment. This fact is the lever used in subduing them, and the method adopted to bring it about, is called 'quieting' them. It has been discovered that under the influence of great fear they will rush to their honey-cells and fill themselves therefrom, as if determined to save all the treasure they can, ere quitting their apparently untenable home, and 'frightening them' is therefore a sure means of 'quieting' them, provided there be honey in the hive of which they can readily partake. There are two methods of alarming them which are always found effectual. One is the violent jarring of the hive and combs, and the other the introduction of smoke amongst them. If the former be relied on, the entrance of the hive should be closed for a moment ere the jarring is communicated, or at the first tap the sentinels on guard at the entrance will rush out and give a hint 'where it hurts,' which will be likely to frighten the offender instead; but if confined they will be subject to the impulse described, and will soon be indisposed to resent the interference inflicted upon them. If smoke be introduced within the hive, the sentinels will be among the first to feel its effects, and terror overcoming their sense of duty they will rush to the cells, and having gorged to the full, will, with their comrades, be incapable of active defence, and, indeed, will scarcely attempt to take wing or move from their combs, and in this condition may be dealt with at will. In frightening them with smoke it is only necessary to force a little into their hive; if much be given it may cause their partial suffocation, and render them incapable of partaking of their honey, and in that condition, although quiet for a time, the effect of the smoke (unless any be killed outright) will soon pass away, and they will attack the operator without mercy. Another cause of failure in 'quieting' bees exhibits itself when a hive contains only a few open honey-cells. If there be 10,000 bees in a hive, and only 500 open cells, it would take twenty minutes for the bees to gorge, supposing they occupied only a minute each, for only one bee can feed from a half-empty cell; and as waiting so long would be tiresome to the operator, the honey supply should be sup-

plemented by sprinkling the combs with syrup, so that all the bees may readily obtain a supply of sweets during their first spasm of fear.

The amateur should therefore arm himself with a means of conveying smoke into the hive, and with a bottle of syrup of thin consistency that will not stick the bees together should they be accidentally wetted with it. Smokers of tobacco need only reverse their pipe and blow through the bowl, directing the jet of smoke into the hive-entrance. One blast only



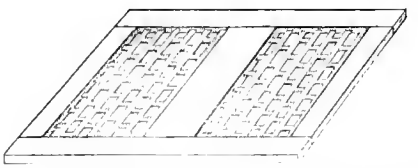
is needed, *i.e.* as much as can be discharged with one exhalation of the breath; more may defeat its object, as previously explained, and if the hive be a skep it should immediately be turned over, and the syrup should be sprinkled on the combs and bees. In turning over the hive, care should be taken that the combs are not held sideways, or they might fall and break, but if kept perpendicular they can be inverted with impunity. The syrup-bottle should be fitted with a cork in which a notch has been cut after the manner of the vinegar-bottle at an ancient oyster-shop, that the syrup may be spurted in drops, instead of poured in streams, upon the combs and bees, and it will be seen that the bees will immediately begin to feast upon it. If the hive be a frame-hive, the crown-cover should be raised when the smoke has been injected, and the syrup spurted beneath. All the bees will then get a supply, and the 'quieting' will presently have been effected. The gorging will be hastened if the alarm be rendered constant by gently jarring the hive and combs after smoking them, but if the former be continued the bees will feel compelled to leave the hive, as they do when subjected to the process called '*driving*.'

Nervous bee-keepers should always protect themselves with a veil and gloves. Precaution is wisdom exemplified, prevention is better than cure, and bees are apt to teach the lesson in an abrupt and painful fashion.

Non-smokers and anti-tobacconists may use any available means for effecting the purpose intended. A roll of smouldering cotton, rag, or corduroy, a piece of burning touch-wood (rotten wood from an old willow pollard is excellent), or anything that will hold fire, and not blaze, held near the entrance, and blown into the hive, will answer the purpose, or smoking machines may be purchased, as the catalogue of any hive-manufacturer will show.

Management of Supers.—Supers are used as convenient receptacles in which the bees, having stored their surplus honey, it may be removed by the bee-keeper without undue interference with the bee-nest and its occupants. It is well known that in a thriving hive the population usually gather during the season of flowers and blossoms considerably more honey than they need for their daily use, and the skill of man has long been exercised in endeavouring to discover the best means by which the bees can be induced to store it in the purest state in virgin comb, so that it may be free from the suspicion of contamination by contact with brood, pollen, or old and dirty cells. A super, as its name implies, is used *above* the brood-nest, and that position for surplus-honey receptacles being necessitated by the shape of the old-fashioned skep with its central crown-hole, has generally been adopted, and is usually relied on by English bee-keepers as the best for the purpose. Our object here is not to prove that this assumption is incorrect, though we think it a debateable one, but rather to offer a few suggestions to aid the amateur in attaining the end in view, by showing the conditions under which the bees will be most likely to take possession of the supers, and fill them with the coveted nectar. A hive in spring, while breeding rapidly furnishes full employment for every living bee that it contains, some acting as foragers during fair weather, others as nurses continually, and the whole as heat-producers at night, and when the weather will not permit them to go abroad in search of honey and pollen. During these early days of increase in numbers every precaution should be taken by the bee-keeper to economise the heat generated in the brood-nest, for with bees heat is life, and the adoption of any measures that may tend to lessen it will be injurious. At such a time giving super space above the brood-nest will allow the heat to escape from the latter and be dispersed above, so that, instead of the bees leaving it, and ascending to the supers, their presence with their brood will be rendered more than ever necessary, and thus many will be prevented from leaving the hive in search of provender. Too early supering will therefore be mischievous, as instead of offering facilities for profitable labour, it will often retard it by necessitating the presence of the bees at home. When, however, the number of bees has increased so that the army of foragers are able to bring home more honey than is required for the daily wants of the brood, and they are storing the excess in the body of the hive, which may be easily ascertained in a moveable comb-hive by actual examination, super space

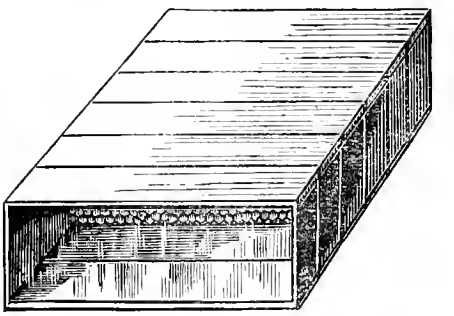
should at once be given. The bees, by storing their surplus in the cells newly vacated by the brood, would be curtailing the boundaries of the queen's dominion, and preventing the deposition of eggs, a proceeding that would shortly reduce the population, for the great labour of honey gathering wastes them very rapidly, and the supply of young bees being prevented the numbers would perceptibly decrease. In hives having only a central top-hole, the supers cannot well be put anywhere but above it; but in frame-hives where their position can be determined at will, we would advise that they be put towards the back, the entrance to them being towards the rear of the centre, or to the right and left rear of the brood-nest. It is an axiom in bee-culture that bees store their honey at the farthest point (or points) from the hive's entrance, evidently from instinctive secretiveness, as cautious men put their treasure where it appears least likely to be stolen, and it is therefore evident that the entrances to supers should be made with due regard thereto. Giving access to supers near the entrance of a hive, to facilitate the storing of honey, is often fatal to the intention: it seems 'convenient for the bees,' but they prefer hiding it away beyond the brood-nest. The entrances to supers being to the rear of the brood-nest prevents the rapid loss of heat from the latter, which has been hereinbefore deprecated, and provided they be well wrapped up the danger attending their early imposition will be considerably reduced. Supers placed over the brood-nest often offer a tempting field for queenly incursion, and unless prevented there is danger that brood may be raised in the new combs built in them—a misfortune that will spoil them for exhibition or sale. Interposing Abbotts' Excluder Zinc will bar the passage of the queen and drones, and she being kept out, there will be but slight probability of the cells being used for the storage of pollen, though this latter vexation *may* happen when access to the supers is given in front of the brood-nest. On skeps with central hole, a piece of the excluder zinc can be readily fixed with a few hair-pins, and will be easily removeable; but on a frame-hive



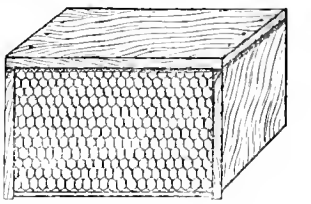
it is usually fitted to a light wooden frame of a ¼ inch in thickness, the zinc being uppermost to permit the bees more ready access to the supers at all points.

In the height of summer, when honey is being gathered freely, and excess of heat may be detrimental to the brood-nest, this arrangement is not harmful, and except that it facilitates the entrance of pollen-gatherers to the supers cannot be complained of, but in doubtful weather we would prefer to cover the front part with the quilt, and to limit the entrance to the supers to the rear.

When supers have been placed on a hive, they are subject to vicissitudes that may arise through swarming, loss of queens, or changes of weather. We have many times repeated that supering will not prevent swarming, but may lessen its probability; and it is no uncommon thing for bees to leave an almost completed super and swarm out. This often arises from overheating of the hive, consequent on an immense population, and because the bees will not permit ventilation through their honey store (the supers), apparently from the conviction that what will let out the heated air, will let in insect enemies. To lessen the chances of swarming from this cause ventilation must be given below, either by widening the entrance-way, or by raising the hive bodily from the floor-board. In hives with legs, the same result will be attained by lowering the floor-board; but in neither case should this means of ventilation be continued if cold or wet weather causes a cessation of the honey-yield, or with such extensive openings robbing might be invited, and once begun, would probably spread throughout the apiary with disastrous results. In treating of supers we are supposing that those only are used which are composed of sections such as are general in the honey-market, as illustrated; the old-fashioned bell-glasses



being expensive luxuries, difficult to get filled, and only fit to be looked at afterwards, they being unsaleable at show and market, and 'messy' affairs for table use, whereas sectional supers can be readily taken a-part, and the sections packed separately for sale or exhibition, or brought out singly for use on the breakfast-table.



When such supers are filling nicely, and a sudden change of weather cuts off the honey

supply from without, the bees will at once begin to carry down the unsealed honey for use within the hive, but they will not interfere with that which is sealed unless they have positive need of it. Should the latter occur, it would be well to remove the supers, and feed the bees until a return of the honey-yield warrants the replacement of those uncompleted. In the meantime, every section that has been sealed out should be removed, and packed away for sale or exhibition, and the incomplete formed into a set for future trial, though after a severe check such as has been herein anticipated, their filling out is problematical except where second and late harvests are the rule.

Many bee-keepers, however, do not dream of putting on their supers until swarming has taken place, and with such the question is, How soon shall it be done? Replying, we would say that considering the bulk of the population will have departed to form the swarm, giving additional space immediately will scarcely seem wise, for there will be a vast quantity of eggs and brood requiring protection, and a cold change of weather may do much mischief; nevertheless, there may be instances when the heat of the weather and the numbers left in the hive will warrant that proceeding. We, however, would, as a rule, wait for a few days until the young bees, hatching at the rate of 2000 to 3000 per day, had recuperated the population, and then the supers may be put on with impunity. Taking the average of eggs laid by the queen prior to swarming to be 2000 per day, and that it takes three days for the eggs to become larvæ, there will at the time of swarming be 6000 eggs in the cells, and as the larvæ remain unsealed for about six days, there will be about 12,000 of them: and as it takes twenty-one days nearly for the perfect hatching of bees, there will be about twelve days' production of eggs in the more advanced, or sealed condition, and these may be estimated at 24,000, or a grand total of say 40,000 bees which, if all goes well, will hatch out of the cells within twenty-one days after the swarm has issued. Now, considering that immediately the queen has left the hive with the swarm, the production of eggs will cease, and that on every day two thousand of the sealed brood will be hatching out, while the same number of larvæ will naturally have been sealed up, and will not need to be fed, it will be evident that the 18,000 eggs and larvæ will have been changed into sealed brood within about nine days after the swarm has left, and there being then no brood (save that of drones) to attend to, the whole mass of bees will be at liberty to gather and store surplus honey, and if the weather and surroundings be favourable, the quantity they would gather before a young queen brought again upon them the stay-at-home duty of nurses would be simply enormous.

A consideration of these points will suggest to the true bee-culturist the propriety of preventing the production of excessive quantities of brood during the height of the honey season, a subject we have touched upon in former volumes, and have had in view in the gradual changes we have been permitted to effect in the construction of hives. Looking also at the facilities that will be offered when comb-foundation, which the bees cannot tunnel through, shall have been perfected, as we have every confidence it soon will be, we see no difficulty in the way of confining the queen to a portion of a hive, and enforcing a rest from her labour that may be beneficial in promoting a later production of brood. On this, however, we must enlarge at another opportunity.

Ligurian Queens and Aged Bees.—Upon discovering a stock to be queenless, the usual course with unthinking bee-keepers is to take advantage of the opportunity for introducing a Ligurian queen, but we have many times shown that the aged bees of queenless stocks have not the power (or the will) to perform the duties of nurses, and as a consequence brood is very slowly produced, if at all. Under these circumstances the poor queen, from whom such great expectations were entertained, is unable to exhibit her powers of oviposition; and the bee-keeper, under a feeling of disappointment, denounces her as 'a fraud,' and the advantages claimed for Ligurians a delusion. If it is intended to ligurianise by the introduction of a queen, she should be united to a thriving colony, and the queen of the latter transferred to the queenless colony. The Ligurian will then have full scope for the display of her powers, and in ninety-nine cases out of a hundred will give satisfaction.

Transferring Queens from Breeding Stocks.—It is often desirable to exchange laying queens from one colony to another, a proceeding that often causes loss and disappointment. When a queen charged with eggs is suddenly removed from a hive and placed in a cage, the sudden change stops her power of oviposition, and, as may be imagined by those who will take the trouble to 'think' on the subject, her system soon becomes disorganized, and she dies, through being surcharged with ova. If, however, she be confined for a day in a small hive or box containing comb and bees (an ordinary travelling queen-box will do), she will quickly accommodate herself to the change, and may then be caged without any danger from the cause in question.

THE CYPRIANS AND 'HOLY' BEES.

On the afternoon of the 28th ult., these bees were allowed their first flight in England, and, whatever doubt had existed as to their true nature, through our never having seen the pure natives, was at once dispelled. Though imported without a vestige of comb (except in six of the cages), the bees on being liberated were in a few minutes thick upon the flowers, the hairy immigrants from Jaffa and Beyrout being particularly interesting from their quick darting movements. The extreme beauty of the Cyprians is undeniable, and they will doubtless prove a most valuable acquisition.—Ed. *B. B. J.*

LESSONS IN BEE-KEEPING.

Those of our readers who wish to see the progress of queen-raising from the egg to the perfect insect, will have the opportunity afforded them if they will visit our apiary on any or all the following days:—June 8, 11, 14, 17, 20, and 24. We propose to deprive a stock of its queen on the 8th, and after that queen-cells will be in course of formation and perfection to the 17th at earliest, and 24th at latest; and we shall have great pleasure in explaining all the circumstances that attend their development, weather permitting, at half-past three o'clock on each day. We are eight minutes' walk from the Southall Station, on the Great Western Railway. The porters will point out the direction. Trains from Paddington, 2.35—2.50; Saturday only, 2.30; Victoria, 1.48; Brentford, 2.45 p.m. This being a very busy season, we trust intending visitors will be punctual.

BEE ASSOCIATIONS.

England and Scotland are doing good service to the cause of apiculture in Great Britain, and doubtless Ireland will follow the lead when the Association's Tent has made the circuit proposed. There are still vast districts unrepresented by associations where bee-keeping is extensively carried on, and where with slight effort those great levers of reform could be called into existence.

We are hoping that Wales will wake up to the necessity for an association. There are many excellent apiarians in the Principality, and at the same time much ignorance that requires enlightenment. There are many counties in England that ought to bestir themselves to keep pace with the times; and notably, this may be said of Lancashire, the home of the skep under the care of Mr. Pettigrew, and of the humane moveable comb system as fostered by Mr. Carr, the clever all-round bee-master who has been told off with us for the expedition into Ireland. We have reason to believe that the way has been made easy to the establishment of a County Association for Lancashire, whose influence would be unbounded. With a noble Lord ready to accept the Presidency, and with a string of nobles and honourables as vice-presidents and patrons, that great county might become an immense power for good in the cause of cottage bee-culture.

Are there no plucky volunteers in Lancashire who would give the time necessary for so good a purpose? We say 'the time' only, because we feel assured that money would not be wanting to keep up a well-organized movement for so excellent an object. Who will come to the front? Our energetic Hon. Secretary, of Abbot's Hill, Hemel Hempstead, will, we are assured, give all possible help, and his vast experience will enable even a nervous beginner to take the reins with confidence, and go bowling along the beaten track, like a tram-car. England expects every county to do its duty, and every man should be jealous to see it done.

THE BEE TENT IN IRELAND.

We have received a Schedule of Prizes from the Hon. Secretary of the Newtownards Horticultural Society, Belfast, at whose show on the 2nd September next there will be an exhibition of bee-manipulation in the tent of the British Bee-keepers' Association. The Newtownards Association offer as prizes for the best stocks of bees (not being swarms of this year) in straw skeps, three new moveable-comb hives, a guinea, and a bee-dress. The bees of the winning hives are to be transferred with their combs into the new hives, and manipulation is to go on from one o'clock during the whole of the afternoon, weather permitting. There will also be three prizes for the best exhibitions of honey in supers, 1*l.*, 15*s.*, and 10*s.*, open to all, and a special competition for the County Down, in which a Lanarkshire hive, 15*s.*, a super (sectional), 2 lbs. of comb-foundation, and a bee-feeder, are promised as prizes. The Newtownards Society is a highly successful one, and for twenty-four years has held its annual show, the exhibition of flowers being a speciality which attracts immense numbers of visitors. Its committee have gradually increased the prize list until it has now assumed a national character. Latterly dogs have been admitted, and last year horses and jumping have been added; and this year bees will, we are glad to say, find a place, and if they do not prove a source of wonder and delight it shall be from no fault of ours. Mr. Carr, of Newton Heath, near Manchester, and our humble self, have been appointed to represent the British Bee-keepers' Association on the occasion; and, all being well,

we shall not fail to show how bees may be dealt with, as if they did not sting. We trust some of the residents who have bees, with a reputation for fierceness, will bring them under our hand, that we may show that even the most truculent are subject to the influences which on another page of this *Journal* is called 'quieting' them. While on the subject, we feel the Newspaper Press authorities would be doing a service to the world if they would republish the article mentioned.

ABBOTT'S FLAT-BOTTOMED FOUNDATION ON WOOD.

At last this long-talked-of material has been manufactured, and will presently be submitted to the fierce fire of experiment and criticism. We have sent specimens of it to sundry friends, and shall doubtless hear a variety of opinions on its merits. Our first experience with it surpassed our most sanguine expectations. We hived a swarm in eight frames filled with it at noon, May 19, and next morning at eight o'clock one comb was finished out, and others begun. Next day a second was completed, and others well forward; but we found that out of *a*, *b*, *c*, *d*, *e*, *f*, *g*, and *h*, *c* and *e* were splendidly perfect, while *d* was cleared in a great measure of the wax, and the comb built in ridges, as it often is, on the glass sides of an observatory. Another swarm in a second hive built dead across, scraping the wax off the boards and using it as contrarily as they could, putting a damper on our glee and a considering-cap on our caput. Why should the bees act so strangely? To the human mind 'they do nothing invariably,' but though instinct displays itself in a variety of features, it never errs; and if some of the foundation was accepted, why not all? and the conclusion we arrived at we will make known after we have had a little more experience with it. In the meantime one gentleman has sent an opinion which he wishes to be recorded, as follows:—

'Allow me to congratulate you on having brought to perfection your long-promised wooden foundation, as shown by the samples received yesterday. It will prove of immense advantage to advanced apiarians; and though last in order, yet on the score of practical utility, it assuredly deserves the foremost place in that long list of your many inventions. A great future awaits it. It is another hill-top gained—a lofty stand-point, opening up a new region of pleasant scenes, fresh fields, and pastures new.—ALFRED RUSBRIDGE, *Sidlesham, Chichester, May* 22, 1880.'

There are many others in a similar strain, which we have received. We have not had our machine a week (May 25), and it has opened a new field for thought and speculation; and though we mention the facts herein, we ask the indulgence of our readers if we refrain from publishing our convictions for the present. Suffice it that the combs are now built straight and perfect, and are full of sealed honey, sealed brood, eggs, and larvæ.

BEE TENT ENGAGEMENTS.

BRITISH BEE-KEEPERS' ASSOCIATION.

June 10, 11.—Essex Agricultural Show, Mistley Park, Manningtree.
June 30.—Farningham Rose Show.
July 1.—Tiverton Horticultural Show.
July 6.—Ipswich Horticultural Show.
July 12–16.—Royal Agricultural Show at Carlisle.
July 14.—Bexley Heath.
July 15.—Woodbridge, Suffolk.
July 16.—Bucklesham Rectory, Ipswich.
July 21.—Southborough Flower Show.
July 27–August 2.—Kensington Show.
July 28.—Frant Flower Show.
July 30.—Liphook Flower Show.
Aug. 3.—West Wycombe.
Aug. 5.—West Kent Show.
Aug. 11, 12.—Surrey County Show.
Aug. 18, 19.—Shropshire County Show.
Aug. 24.—Long Buckby Horticultural Show.
Aug. 27.—Sandy.
Sept. 3.—Devon and Exeter County Show.
Sept. 17.—Great Dunmow.

HERTFORDSHIRE COUNTY ASSOCIATION.

July 7.—Herts Agricultural Show at Hatfield.
July 8.—Hertford Cottage Garden Show.
July 15.—Hoddesdon Cottage Garden Show.
Aug. 5.—Frogmore Cottage Garden Show.
Aug. 20.—County Show of Flowers, Fruits, Vegetables, Bees, Hives, &c., at St. Albans.
Aug. 27.—Much Hadham Cottage Garden Show.
Sept. 2.—Harpenden Horticultural Show.

TOUR IN IRELAND.

Aug. 10.—Royal Agricultural Show in Clonmel.
Aug. 18.—Maryborough County Agricultural Show.
Aug. 28.—Newry.
Sept. 2.—Newtownards Flower Show. Near Belfast.
Sept.—Royal Horticultural Show at Dublin. First week in September.

BEE AND HONEY SHOWS FIXED FOR 1880.

July 1.—Tiverton. Devon and Exeter.
July 27, 28, 29, 30, 31, and August 2.—South Kensington. British Bee-keepers'.
July 27, 28, 29, and 30.—Caledonian Apiarian Society's Show at Highland and Agricultural Society's Meeting, Kelso.
Aug. 5.—West Kent.
Aug. 11, 12.—Surrey County.
Aug. 18, 19.—Shropshire County.
Aug. 20.—Herts County, at St. Albans.
Aug. 25.—East Scotland. Arbroath.
Aug. 26, 27, 28.—At Dundee.
Sept. 2.—Exeter. Devon and Exeter.
Sept. 2.—Newtownards Flower Show.
Sept. 3.—Central Training College. Exeter.

BRITISH BEE-KEEPERS' ASSOCIATION.

Committee meeting held at 105 Jermyn Street on Wednesday, May 12. Present: Mr. T. W. Cowan, in the chair; Mr. J. P. Jackson; Rev. G. Raynor; Mr. J. Hunter; Mr. F. Cheshire; Mr. R. R. Godfrey; Mr. J. M. Hooker; Mr. W. O'B. Glennie, Treasurer; and Rev. H. R. Peel, Hon. Secretary. The minutes of the last meeting having been confirmed and signed, the Secretary read a letter received from Mr. Carr, offering to accompany the Bee Tent throughout the tour in Ireland. It was resolved unanimously that Mr. Carr and Mr. C. N. Abbott should represent the Association in the Irish tour, to commence on August 10 at Clonmel; and that Mr. Cheshire and the Assistant Secretaries should attend the Royal Agricultural Show at Carlisle, commencing on Monday, July 12. Judges for the several Classes, and Lecturers for the Bee Tent, at the Association's Annual Show at South Kensington, commencing on July 27, were appointed, and the Secretary was requested to write to the several gentlemen selected, and to report their replies to the next meeting.

Votes of thanks were passed to Mr. Hunter and Mr. Cheshire for their labours in writing the MS. of *Handbook for Cottagers*. The diagrams about to be published by the Association were reported to be making satisfactory progress towards completion. The Balance-sheet for the month ending April 30 was read, showing a balance in hand of 25*l.* 7*s.*

DONORS TO PRIZE FUND.

	£	*s.*	*d.*
Rev. G. Raynor	1	1	0
T. W. Cowan, Esq.	1	1	0
R. R. Godfrey, Esq.	1	1	0
H. G. Morris, Esq.	1	1	0
F. R. Jackson, Esq.	1	1	0
Rev. H. R. Peel	2	2	0
Rev. J. Lawson Sisson	0	10	0
Mrs. H. R. Peel	0	10	6
Edward Wilson, Esq.	0	10	0
Mr. R. J. Tomlin	0	5	0
Mr. J. Walton	0	2	6
H. Bostock, Esq.	2	2	0
R. Symington, Esq.	2	2	0
F. C. C. Barnett, Esq.	0	10	0
C. H. Hodgson, Esq.	0	5	0
Capt. P. E. Martin	1	1	0

COUNTY ASSOCIATIONS.

It is gratifying to announce that since the Central Society established its present mode of procedure of assisting in the establishment of County Associations much progress has been made in their formation. Associations for Warwickshire, Suffolk, and Berks and Bucks, have been recently formed, and have affiliated themselves with the Central Society. Eleven County Associations are now affiliated with the British Bee-keepers' Association, and are making good progress in their work. The Hertfordshire Association, one of the most recently established, now numbers 250 members, and upon reference to our advertising columns it will be observed that it holds its Annual Show in connexion with a County Flower and Fruit Show on a large scale at St. Albans on August 20 and 21st; the date of this Show has been rearranged: it was originally fixed for September 8th and 9th, but as it was found practicable to hold a County Flower Show in connexion with it, it was requisite to change the date in order that the time fixed upon should be suitable for the holding of the Flower Show. The Executive of this Association have also in contemplation the publication of a small quarterly paper for the purpose of reporting information relating to the Association's work.

PROPOSED ESSEX COUNTY ASSOCIATION.

We are requested to announce that Mr. G. D. Clapham, of Great Dunmow, has most kindly consented to act as Hon. Sec., *pro tem.* of an Essex County Bee-keepers' Association. Essex bee-keepers wishing to join a County Association may forward their names to Mr. Clapham. It is proposed to hold a meeting, for the purpose of starting the Association, at the Show of the Essex Agricultural Society at Mistley Park, Manningtree, on June 10th and 11th.

BERKS AND BUCKS ASSOCIATION.

The Annual General Meeting of the Association took place on Saturday evening, May 15th, and after the business Mr. Hunter gave a very interesting lecture on 'Bee-keeping' at the Albert Institute, Windsor, P. Williams, Esq., Eton College, in the chair. He had a moveable frame hive to explain the modern system of bee-keeping; and several sections of supers (American dovetailed) also some diagrams. He very clearly explained their workings, and greatly encouraged many of those who had been so thoroughly disheartened by wet weather and loss of bees last season. Many questions were asked, and satisfactorily answered by Mr. Hunter.

THE COMING BEE.—CYPRIANS AND HOLY LAND BEES.

DEAR FRIEND ABBOTT,—I would have written to you before I left here for Palestine and Syria, but I thought Mr. Benton had written you all about the island of Cyprus and Cyprian bees; but I learn on my return that he did not, and I hope you will pardon the delay, as we have been very busy getting things in shape here. After visiting the principal bee-keepers of Europe, or rather some of them, as well as the various editors of Bee Journals (and here permit me to say the visit to your place will ever form one of the happiest recollections of my life), I sailed down the Adriatic Sea, crossed the Mediterranean, and landed at Alexandria. From there we went to Cyprus, and, after visiting almost every point where bees were kept, we succeeded in purchasing a large number of Cyprian bees. We located out apiary at Larnica and prepared hives for over two hundred colonies. Mr. Benton started transferring and bringing over the mountains about one hundred colonies on mules and camels' backs, a distance of from thirty to forty miles; and the expense is very great transporting in that way, as there is only one waggon-road from Larnica to Nicosia, and only mule and camel paths where the bees were. So while Mr. Benton was collecting bees and getting things in form at the Larnica Apiary, I went across to the Holy Land, and made a flying visit through Palestine and Syria, and examined the bees in all parts of that country, my object being to ascertain if they had any valuable characteristics worthy of notice. I was happily surprised to discover a most valuable race of bees; and I think I have struck the fountain-head of superiority. I was so wonderfully attracted by them that I ventured into some not very safe places to investigate and ascertain if there was any difference in the bees in the different parts of the country. I found them going double the distance, and in some instances more, for honey when necessary, than any of our Italians or blacks do in America. They also fly very much faster, and dart from one flower to another with such rapidity that I found great difficulty in catching them, which I only succeeded in doing after they were very heavily laden; they seem to be able to carry immense loads, and fly wonderfully swift when so loaded. In numbers of instances, I found them at an incredible distance from their

hives. I secured a number for microscopic examination, as they have powers of locomotion not possessed by any races I have ever seen. That they are a pure race of bees which have existed there for thousands of years, and probably since the foundation of the world, I have no question. That they have valuable qualities not possessed by any others I feel very sure. I may say I was so favourably impressed with them that I sent a cable message home to Canada from Jerusalem for a large sum of money to further enable me to import a large number of them, as well as the great Cyprian bee, which has proved its superiority over our blacks and Italians.

I have secured a large number of colonies of the 'Holy' bees, as the natives call them. I got them from the following places, Mount Lebanon, Mount Hermon, Mount of Olives, the Valley of Sharon, Bethlehem, the Hills of Judea, Jerusalem, Jordan, Ammon, East of the Jordan near the Desert, Galilee, Damascus, and various other places in Syria. I sent them to the coast on camels, mules, and donkeys, and the loss was very heavy in getting them to the coast; in some instances it took nine days to make the journey. When they arrived at the coast, and the expenses were counted, I was astonished to find some costing very many pounds. I had them transferred to steamers and sent to Cyprus, where I have my great Cyprian Apiary, as the natives call it, for raising queens, and they will be transferred from their hives, of various sizes and shapes, to my moveable comb-hives, and prepared for their long journey to Canada. I think after my losses are taken out I will have left at least one hundred and fifty queens from Palestine, but as the combs are so badly broken in the hives I cannot tell until I get them all transferred and in shape.

There are so many orders arriving here for queens that I have made arrangements to increase my apiary to three hundred colonies if necessary, or more, to supply the demand for Cyprian queens. Some of the Italians are importing now to improve their stocks, and we expect large orders from Italy, and we already have orders from a large number of the best breeders in Europe, especially Germany and Austria.

I will start from here with a large number of colonies for Canada about the 12th of May, stop in London to give them a purifying flight, then proceed to America, where I hope to arrive with all safety. I have devised a most extraordinary queen-cage, one which I believe will keep bees in good condition to transport almost any distance. It is very cheaply made, and is so constructed that any amount of ventilation can be given. Food and water can be given at any time without opening the cage. All dead bees can be removed without disturbing the live ones, and they can be given a purifying flight by simply drawing a slide, and the condition of the bees and queen can be seen without disturbing them: in fact, it far surpasses any yet invented that I have ever heard of; and as I do not patent it, it is public property, and therefore I hope all bee-keepers will avail themselves of its use.

I have also devised a shipping crate that allows a free circulation of air to every cage or nucleus, so no danger will occur by close packing. Mr. Benton remains here, and raises and ships queens to all parts in Europe, and to me in America. After I leave here, in about a month, another shipment of two hundred will follow, and all orders sent to your office you can fill from the shipments to me in America. As you are giving them a purifying flight at your apiary, you can select all strong, healthy queens, and guarantee their safe arrival. In fact, if you wish we can send you a stock to keep on hand, so that you may supply all orders promptly. As the steamer with the mail is about leaving I must close; but I look forward with pleasure to the time when I will have another opportunity of visiting you at Fairlawn. —D. A. Jones, *Island of Cyprus, 27th April*, 1880.

LETTER FROM M. DENNLER.

Enzheim, 1st March, 1880.

My dear Mr. Peel,—I have read with great interest and pleasure your kind letter and report on the annual meeting of your honourable society; I have read it with much more pleasure because it was the first letter in English that I have been able to read without a dictionary. I thank you for having written to me in English: my friend, Colonel Pearson, writes to me very often,—every eight or ten days, and always in English; so that, with several newspapers in that language, and a special study which I am making of it, in a little time I hope to completely understand English.

But let us now come to the true end of the present letter. You wish to establish in England a professor's chair of apiculture, and you ask me what the German Government does to promote the knowledge of rational bee-culture. I can inform you exactly on that subject. From what I have read in the report of the Rev. E. Bartrum's speech, the professor of English Apiculture would have to give himself up entirely to apiculture, and would receive a fixed annual salary. He would have to teach in turn in the different establishments, agricultural or otherwise, in the normal schools, and hold public classes in different places.

This is not the case in Germany. The different provincial governments allot annually a certain sum, 200, 500, 1000, or even 2000 marks for apiculture, and place that sum at the disposal of Apicultural Societies. It is for the latter to make the best use of it. The money is generally expended in the following manner:—

The Society appoints one, two, or even three capable members, learned in the science of practical apiculture, and sends them to hold conferences in different localities, selected and announced in advance in the Bee Journals and in the newspapers. These travelling professors—if I may so call them—are almost always schoolmasters, and the time employed in performing the stated course is ruled by the summer or harvest holidays. The country of Baden reckons thus three apicultural professors who are by profession parish schoolmasters. They have a fixed salary for their course of lessons, which they give during their scholastic holidays. In Alsace our Society is divided into about thirty sections, of which the presidents hold one or two conferences annually in the respective countries. If the presidents wish it, one of the assistants comes to them at the lectures and at the practical experiments. In the last case the conferences take place on Thursday or Sunday after the service in church.

As far as I know a bee professor's chair does not exist, teaching exclusively this subject; I know that normal schools or establishments for teaching agriculture where apiculture is taught without being placed definitely on the programme of teaching. At Poppelsdorf, near Bonn, is the only academy of agriculture which has a special professor of apiculture—Dr. Pollman.

Another use for the money allotted by the Government is in giving prizes at numerous bee shows, which take place during the summer and autumn, in distributing hives, models to the poor peasants and beginners, so that they make hives in the gardens of the parish schoolmasters, and to send one or two delegates to the most important exhibitions—be they in the country itself or abroad.

The Minister of Agriculture chooses besides each year one or two members of each to be present in the Grand Reunion called Dutch and Austrian Bienenwurthe. The delegates have to furnish a detailed report of their remarks, which is printed in the Agricultural and bee-keeping papers of the country.

There are to-day in Germany fifteen bee-keepers' journals, of which thirteen are monthly, and two fortnightly. The most important of these is the *Bee-keeping*

Gazette, of Eichstadt, published by M. Schmid, edited by Dzierzon, Hilbert, and other great learned bee-keepers in Europe. This paper, started by Mr. Schmid, who still edits it, has existed for thirty-six years. It is the oldest Bee Journal in the whole world, and the *Friend of the Bee* in Saxony are published by private persons at their own risk and peril. All other German bee papers are published by the Societies of Apiculture, for which they serve as the organ of publication and instruction in apiculture.

I send you the papers published during the twentieth Congress of Bee-cultivators at Strasburg in 1875. You will find in them much information relating to the history of bee-culture in the provinces of Germany and Austria, which will interest you. I think I have said enough now in reference to a professorship of bee-keeping. I shall be very pleased if this information can be of any use to you, and it will always be a pleasure to me if in future I can furnish other information concerning the culture of our dear bees. Meanwhile I pray you, dear Mr. Peel, to believe me, always yours very truly, DENNLER.

P.S.—As you have asked me on two occasions the price of the *Bienenzuchter*, it is for members 2 mares: for foreigners, ½ marc more for postage.

SALE OF BEES AT FENWICK, AYRSHIRE.

Mr. Muir having announced a few weeks ago that he intended to sell off his apiary by auction, it was with delight many apiarians from all parts proceeded to attend the sale of one who is going to 'swarm' for hundreds of miles from his native land.

This gentleman will be greatly missed. At all the principal shows throughout Scotland, he was as regular as the 'mail,' and was always sure to be at his post when duty called him; and of him it has always been remarked by all who attend them 'that he was like the "Worker Bee," as he toiled from early morn till night' to make the exhibitions as interesting and successful as possible. He was always noted for the patient way in which he performed the arduous duties which generally devolved on him of collecting the admission-money. He will also be greatly missed by his large circle of friends in and round all Ayrshire, as he was greatly respected by all who knew him for his kind, genial manners.

The following was the order of sale and prices realised:

No.	Kind.	Weight.	Price. s.	d.	Buyer.
1	Straw Skep	22 lbs.	30	0	Angus Cameron.
2	Stewarton Hive	25 ,,	31	0	Andrew Stitt.
3	,,	27 ,,	31	0	Robert J. Bennett.
4	,,	28 ,,	30	0	Robert Reid.
5	Straw Skep	24 ,,	31	0	William Shields.
6	Stewarton Hive	36 ,,	39	0	Robert J. Bennett.
7	,,	25 ,,	27	0	William Shields.
8	,,	33 ,,	31	0	James Paton.
9	Straw Skep	18 ,,	30	0	Angus Cameron.
10	,,	21 ,,	26	0	John Alexander.
11	,,	17 ,,	29	0	William Shields.
12	,,	20 ,,	29	0	John Howard.
13	,,	27 ,,	26	0	John Deans.

A large quantity of miscellaneous bee furniture and gear was then disposed of. The Stewarton honey and body-boxes alone realised *3l.* 14*s.*, and the other articles *2l.* 5*s.* 11*d.*

TOTAL AMOUNT REALISED.

Bees	£19	10	0
Bee furniture, &c.	5	19	11
	£25	9	11

AN INCIDENT OF THE INDIAN MUTINY.

On the way to Alum Bagh an incident of a singular, and, it might have proved, of a serious nature, befell our soldiers. In a tope (clump) of trees through which our force passed, Lieutenant Evans, of the 9th Lancers, perceived a nest of bees hanging from a branch. In thoughtless mischief he ran the point of his lance—with which weapon most of our 9th Lancer officers in those days provided themselves—into the brown-paper-looking bag. The infuriated miscreants rushed out of their dwellings in myriads, and attacked their aggressor and the whole of the advanced-guard with such resolution as to send them to the right-about, bolting as if a whole army of demons were pursuing them; indeed, had such been the case, I believe they would have stood their ground unflinchingly. Col. Hope, seeing the flight of these brave soldiers, and not knowing the cause of it, in hot haste formed up his men ready to resist an attack of cavalry, supposing the enemy were coming down in force upon them; but when he saw the poor fellows with their faces and hands covered with the little black bees, which would not be shaken off, his amusement was unbounded. I am sorry to say, though, that for some days afterwards one poor artillery officer was in danger of his life from the effects of the stings.—*From Gen. Sir Hope Grant's Incidents of the Sepoy War.*

GREAT LOSS OF BEES.

(*From the Western Gazette.*)

The time is fast approaching when bee-keepers will be 'all alive,' and, with your permission, I venture to lay before your readers a few particulars showing the great destruction of bees during the past season in this district. The returns from the undermentioned parishes, kindly supplied by trustworthy residents, are now in my possession, and may be inspected by anyone interested in the matter:—

	No. of stocks at Michaelmas, 1879.	No. alive at date of return.
Somerton	... 64 ...	... 10
Charlton Adam ...	... 28 ...	... 2
Street	... 46 ...	... 2
Keinton	... 21 ...	... 1
Compton Dundon ...	... 43 ...	... 0
Kingweston ...	... 19 ...	... 9
Babcary	... 19 ...	... 3
Long Sutton ...	... 78 ...	... 7
Podymore Milton ...	... 20 ...	... 2
	338	36

The returns also state the class of hive used in each case, but the information so gained does not afford any means of judging as to which has been the most successful. They also show the great extent to which neglect of feeding has prevailed. Had this precaution been adopted, the losses recorded would hardly have numbered more than one-fourth of the actual number. Two of the stocks of bees operated upon by Mr. Abbott, at our flower-show, last year, purchased after the show by a novice, though weak, have, by means of liberal autumnal feeding, been preserved, and are now in a prosperous condition.

The fortunate owners of strong stocks should look forward to a profitable season: a large demand for early swarms may be expected, and, on the basis of figures quoted, each stock will have an average bee-pasturage of 640 acres.—THOMAS C. HEAD, *Somerton, May 4th*, 1880.

[Three hundred and two stocks dead out of three hundred and thirty-eight! That's brave. Had a murrain carried off one-half the percentage of sheep or lambs, there would have been a terrible outcry, and probably a Government inquiry into the cause. In this case, however, the calamity is, of course, attributed by the owners to Bad Luck.—ED.]

Correspondence.

*** *These columns are open to Subscribers, so that their queries, replies, correspondence, and experiences, may be* fully *and* faithfully *recorded; and for the discussion of all theories and systems in Bee-culture, and of the relative merits of all hives and appurtenances, that the truth regarding them may be ascertained. The Editor, therefore, must not be expected to coincide with all the views expressed by the various writers. All Correspondence is addressed to the Editor.*

PROFITS OF BEE-KEEPING.

On page 249 of the April *Journal* I asked Mr. F. Cheshire if he would explain how a cottager could make a profit of 3*l.* per hive per year, he (Mr. Cheshire) having made a statement to that effect, as reported in a Hertfordshire newspaper. In reply to this Mr. Cheshire (*vide Exeter Gazette*, April 16) at a lecture delivered before the Devon and Exeter Bee-keepers' Association, is thus reported: 'He had said that a cottager might make 3*l.* a-year by a hive, and that had been questioned by some one who did not give his name. He was not accustomed to make statements he could not substantiate, and he preferred not to deal with anonymous correspondents. But they knew what a wretched season the last had been, and he might mention that he had last year bought a hive for 1*l.* 1*s.*, from which by proper treatment and feeding he had had 5*l.* worth of honey.' This is rather a startling statement, and although followed by urgent remarks on the value of judicious feeding generally, so large a honey result in the honeyless (?) year 1879 leaves me still—A Questioner.

COTTAGERS' HIVE-MAKING.

A great deal has been said and written about cottagers and others making their own hives, and buying boxes for 1*s.* wherewith to make the same, irrespective of shakes and old nail holes, not to speak of wood of an improper thickness, and in nine cases out of ten quite unsuitable for such important work. But suppose the wood was all right, how often do we find them far from perfect? I have seen them well finished with their frames fitted into the hives just about as tight as a cabinet-maker would fit a drawer. Again, I have seen them with a space of half an inch at the ends, and the same at bottom. Sometimes they (the frames) would measure $1\frac{3}{4}$ inches from centre to centre. I once saw a 'home spun' hive with frames 2 inches broad.

I do not mean to put a 'damper' on working men. I would rather encourage them to make their own hives; but not unless they *can* do it. To the handy cottager who *can* work both the square and rule I would say, Buy a sample hive—a complete one if he is able—if not, a cheap one properly made. If I mistake not, Abbott's cheap Standard costs 4*s.* 6*d.* What more is needed? This hive can be made quite as good as the most expensive, with a little work. I have seen hives not so good as the one I have mentioned cost 25*s.* Improperly made hives often do a great deal of mischief. I would therefore advise all who are about to start bee-keeping to have to do with those properly constructed. Another practice is quite common, viz. buying a sample hive, and giving the order for say a dozen more to one's own carpenter. The carpenter is, perhaps, quite ignorant of practical hive-making, and the result is a complete failure. The system is blamed, and everything else save the right one. Is it not reasonable to suppose that the hive-maker will make the best job? Yes, and the cheapest in the long run: therefore I say, Buy from such, and avoid the mistakes so common in home-spun work.—A. Cockburn, *Cairnie, N. B., May* 13, 1880.

[If amateur hive-makers and country carpenters would believe that the technical dimensions we give are correct they could doubtless make hives as well as *they* do who make the business a speciality. But they too often think it cannot make any difference whether the distance round frame ends is $\frac{1}{4}$ or $\frac{1}{2}$ an inch, and ere now we have been told of our folly in keeping frames and combs so close together in hives, 'when if more room were allowed there would be as many more bees able to work between them, and store honey,' &c. Of course these ideas could come from a tyro only, but such, unfortunately, are too often those who persist in ignoring the experience and instructions of older hands, and when they have reaped the penalty of their folly are the loudest in condemning the improved hives. As a matter of fact, an amateur who is handy with the saw, hammer, and square, may make hives more cheaply than he can buy them if his time is not of value; but if he can earn from eightpence to tenpence per hour, it ought to pay him better to buy, unless the work be accounted relaxation or amusement.—Ed.]

CHEAP HIVES.

I can add my word to the goodness of your Makeshift Hives, as I have had bees in them the last two winters, with no further protection than a good roof over them, and the bees have been as warm and dry as possible. When I examined them this spring I only found a very few dead bees on the bottom, and only one comb, an outside one, slightly mouldy. In fact, it seems to me as if the simple Makeshift is quite as good as the more elaborate double-walled hives, and I have found the bees keep drier in it. I hope we are going to have some encouragement this year in the matter of weather, as we have not had much the last year or two.—S. Clarke, *New Court, Ross.*

CHEAP HIVES.

I see from the report of your meeting held April 14th that the conversation turned upon cheap hives. I have seventeen stocks of Ligurians all doing well. I have no difficulty in wintering. I have a wood bee-house made of $\frac{3}{4}$-inch boarding, waterproof. The hives stand on shelves, three tiers one above the other. The house is capable of holding fifty-three hives. My hives are made principally out of salmon-boxes, which only cost me a few pence each. Inside measure they are $12\frac{1}{4}$ inches from front to back, and 19 inches the other way, by 9 inches deep. They contain about 2000 cubic inches,

some of them only 1600 cubic inches. They are plain boxes without frames, with two 2-inch holes in the top for feeding and supering. I have different kinds of supers—bell-glasses, plain boxes, and several crates of sections. I cannot fully judge yet how my mode of working will answer. I have no doubt but the bar-frame system, when it is rightly worked, is the most profitable. From various reasons I have decided not to adopt it, and have thought the mode I have adopted to be the next best way to work. Would you kindly give me your opinion about this, and also as to the size of boxes I have named? I intend increasing my stocks to fifty. I erected my own bee-house, and prepare my own hives and wood supers. Send me any information you can to help me to successful working.—THOS. WHITEHOUSE, *near Brierly Hill.*

[The boxes will do admirably for the bees, but frames would render them more convenient to you (not to the bees) if you at any time want to investigate their condition. The size most suitable is a matter in which experience of the district will be a better guide than would the individual opinion of any one at a distance, with no knowledge of the locality. Two thousand cubic inches is about the contents of our eight-framed Standard, and that is rather small for some places and seasons, and a little too large for others. In some years there is no difficulty in getting 60 to 80 lbs. of surplus honey from such boxes, while in others the bees may possibly barely maintain themselves. When you feel the necessity for frames, which may not be until a difficulty arises within the hive, we would advise that you adopt such as will prevent the escape of heat round the ends of the combs, as suggested in *Journal* for May last, p. 3.—ED.]

LIGURIAN BEES IN AUSTRALIA.

I send you the following, which is a copy of what appeared in the *Journal of Horticulture*, June 27th, 1865. Perhaps it may be of interest to your correspondent, L. E. R., Alderley Edge.—W. T. JOYCE.

'*The Ligurian Bee and the Vineyards.*

'I have been asked to confute a very absurd paragraph under the above heading, which has been copied from a Melbourne paper into several of our English newspapers, and which declares that much damage has been done to the vineyards in Australia by the new bee. I need only state that no complaint of the kind appears ever to have been made in Italy, where this bee is indigenous, nor has it arisen in the Rhine provinces of Germany, into which the Ligurians have been extensively introduced, whilst nothing would in the slightest degree tend to give even a colour to the imputation has ever come under the observation of—*A Devonshire Bee-keeper*,' *Farnborough, Hants.*

SPRING DYSENTERY.—QUEENLESS BEES.

I think it would help me, and some others that I know of in this neighbourhood, if in the next number of the *B. B. J.* some light could be thrown on the cause of the dysentery which attacked almost all my stocks about a fortnight ago. I know of no cause for it myself—unless it has something to do with the sugar with which they have been fed. They have all safely got over it, nor did it appear to interfere with the bees working, although one had to watch very carefully to see that they got into their hives when they got home. I might have thought that the large quantities of pea-flour which my bees have taken may have had a bad effect, but I find the disease attacked other people's apiaries about the same time where little or no pea-meal had been taken.

The complaint broke out simultaneously with the blooming of the dandelions. I suspected that flower at one time.

I am happy to say that all my sixteen stocks have now safely weathered the winter and spring, and are in a fair way to do well—with the exception of one, which has lost its queen, and which I am puzzled to know what to do with, although it fairly maintains its own so far. I wonder if it would do to give it a piece of brood comb when the drones come out.—J. H. D., *Hungerford, May* 15.

[From the fact that the dysentery was not confined to one apiary, the inference is that it sprang from a cause common to all, and not from any special mode of treatment. It is pleasant to find that the suspicion which seemed to attach to the pea-flour is thus dispelled, it (the meal) being an invaluable aid in early spring. Though the pea-flour was not given all round, it is probable that *syrup* may have been, and such syrup may have been made from an inferior sugar, supplied to a whole neighbourhood from one source. Except on some such hypothesis it is difficult to ascribe a reason for dysentery making its appearance, and, in some instances, making dreadful havoc in apiaries during such comparatively fine weather as we have been of late enjoying. The disease is unusual at times when bees can take wing, but we have heard this season of an apiary of many stocks being completely ruined by dysenteric disorder, the feeding having been as in former years, except that possibly the sugar obtained from beetroot may have been used instead of that from cane. These sugars are pronounced by authority to be chemically the same when properly refined, but short of that they may be very different in character. We shall esteem it a favour if any friend will help to solve the question asked above.

If a brood comb were given to the queenless bees they would doubtless raise a queen, but it would be better and save time to give them a sealed queen-cell. If in straw skeps, from which it is often difficult to transfer brood or queen-cells without damaging the combs, it would be good to interchange hives with another stock, giving the queenless bees the hive of brood, and those having a queen the hive of broodless combs. The bees themselves should in the latter case be driven out of both hives before the interchange, and be allowed to run into the exchanged hives on their own respective stands.—ED.]

PROLIFIC BEES.

I had a Ligurian queen of you two seasons ago. You may be interested to know that last year she led off a swarm (and four strong after-swarms followed from the same stock, which were joined two together, all of which are strong and healthy now; but the after-swarms turn out hybrids). The swarms afterwards sent off a virgin swarm, a very fine one; but they strayed a couple of miles, and I didn't discover them for a fortnight. This virgin swarm, as well as the one it left, have both wintered capitally; and to-day I have had the finest natural swarm from the virgin swarm that ever I remember to have seen. I needn't say that I value this queen very highly, and shall take great care of her and her progeny. She is the quickest and best breeder that I have ever had to do with. She is as

pure as when I had her; but all her grandchildren are only half-breds, which is not remarkable, seeing what a quantity of black drones there are within range.—Geo. F. Barrell, *Spalding, May* 6, 1880.

[A queen of such extraordinary breeding power is the right sort to breed from; and every one of the queen-cells raised from her brood should be utilised in ligurianising the black stocks in the neighbourhood. Her drone progeny will doubtless have a considerable influence in that direction, but the cross will be the wrong way round. The influence of Ligurian fathers is good in a degree, but that of Ligurian mothers, even though they may happen to mate with native drones, is far better, and more lasting.—Ed.]

BEES IN A MILL.

I tried to hive the bees out of the mill to-day, and partly succeeded. I found out whereabouts they were by thrusting a gimlet in in several places, then cut out the boards; but when out, the combs were a yard long from the joist where they were fastened, and the bees, well—I cannot describe the number, it was truly legion. I could not distinguish the queen, it was impossible, so I cut out brood-combs as well and carefully as possible, and transferred them to the hives I intended, and then swept the bees in. Fungus processes were perfectly useless. I filled three hives. I would willingly have paid a guinea and expenses for some one to come and stake them for me, had I known what a splendid lot they were, but I have now done it as best I could. I shall plaster up the places where they go in between the boards to prevent their return.—R. R., *Maidenhead.*

BEES AT FETTERCAIRN, N.B.—NO HONEY MARKET.

This district (with its large area of pasture-land and honey-producing plants, flanked by the Grampian Mountains, on whose rugged sides towards autumn may be seen thousands of acres of 'blooming heather') is certainly a splendid place for the pursuit of apiculture. Here is abundant material for work, but where are the workers? They are, I am sorry to say, almost extinct. When visited by bad honey-gathering seasons (such as last) cottagers in this vicinity won't be persuaded to feed their bees, but foolishly permit them to starve, rather than incur any expense for food to tide them safely through the winter. Thus their valuable lives are sacrificed, and on the return of better times, tons of honey are ungathered and apparently wasted. The principal reason for this procedure, on inquiry, I find to be, that it requires an outlay of money to purchase food for their bees, without the prospect of a cash return, because they cannot find a market for their honey. This is the great rock on which bee-keeping makes shipwreck in these parts, and until some means be devised whereby the cottagers can find a ready sale for the produce of their hives at fairly remunerative prices, bee-keeping will be altogether, as it is now almost, abandoned.—J. S., *Fettercairn, May 22nd*, 1880.

[It is simply absurd for cottagers and others to cry out, in excuse of their stupid neglect of their bees, that there is no honey market, when there is scarcely a grocer's window in the whole country that does not prove to the contrary. The fault is not in the honey, nor in the public, who fully appreciate and freely purchase a good article, but in the bee-keepers themselves, who will not take the trouble to produce their honey in a saleable form. Instead of old gallipots and pickle-jars, that suggest the odour of pomatum and onions, if the complainers would pack their honey in suitable form as suggested by Mr. Hunter in his paper on the subject (p. 12 of present volume), and send it to Mr. Baldwin, the agent of the British Bee-keepers' Association, who has arranged with honey-dealers for its sale (see p. 204, Vol. VII.), they would soon find an outlet for it.—Ed.]

BEE-FARMING—INFORMATION WANTED.

Can anyone inform me of a bee-farm in England on which is cultivated nothing but bees? If a man were to start as a bee-farmer, could he make a livelihood by so doing; and could he readily dispose of the honey if he farmed on a large scale? What capital would be necessary in order to start a farm that would bring in an income of 100*l.* per year? I shall be very grateful for full particulars on the foregoing questions, as I have been thinking of starting a bee-farm, but am quite ignorant as to whether such an undertaking would pay.—J. A. R., *Croydon.*

BEES NOT WORKING—WHY?

I have a hive of bees that wintered all right. They commenced breeding early. The hive is a straw skep; it was full of bees. There was plenty of young workers. The drones came out in full force on the 14th of April, on the 28th they began throwing out drones and drone-brood in all stages. They have stopped breeding and working, though we are having lovely weather. They have plenty of food. I have given them pea-meal. If you could tell me what is the matter and how to cure it, I should be very greatly obliged. My other stocks are all right. Could you recommend a cheap book of reference? I bought two, but they give the anatomy of the bees, but nothing of management. I am a working man, and cannot afford to spend too much, having a family of children.—James Hadfield, *Wadsley Bridge, near Sheffield.*

[The casting forth of drones and drone-brood indicates that the hive received a severe check when presumably it was progressing gaily. Young bees were there to testify to the presence of a fertile queen at a slightly earlier period, so the drones cannot be supposed to be the offspring of a fertile worker. It is evident that the cold or short commons that caused the destruction of the drones and brood also led to the death of the queen, from which calamity they have not yet recovered. We would give them a sealed queen-cell as a test; if it be not destroyed within, say twenty-four hours, you may feel assured of the presence of a queen, though it is possible she may prove unfertile, but that cannot be governed, or even discovered until her brood is sealed. Should there be no queen present the queen in the cell will hatch out in due course, and all will probably come right. The drone-brood of an unfertile queen makes itself conspicuous by the worker cells being elongated, as illustrated in a late No. of the *Journal.* Messrs. Hunter and Cheshire are preparing a 'Handbook' under the auspices of the British Bee-keepers' Association, but we cannot say when it will be ready. In the meantime we cannot suggest a better help than our 'Leaflets for the Million,' at a half-penny each, 1*d.* post free, 6*d.* per dozen post free, or 25*s.* per thousand.—Ed.]

BEES AND BEE SHEDS.

It is very lamentable to see the frightful mootality among bees that have been neglected. In my walks I come upon hives one after the other with the bees starved to death. A gentleman, who has spent I daresay 20*l*. on his bees, and who has them in a smart house, full of boxes, met me last week, and told me *all* his bees were dead. 'I have been losing,' he said, 'on the average two every year, till this year all have gone.' On visiting his apiary, it was not difficult to see the reason of this; on opening the hive the stench was so great from foul brood that we both had to retreat. I have forwarded him the *Journal* on foul brood. These bee-houses seem to me to combine every disadvantage possible for bee comfort. I have two weak stocks, but they both have queens, and both are breeding, though they have no reserve of food. Would it be best to unite them? I am loth to do so; or to take two combs from my strong stocks to strengthen them? —H. C. S.

[As a rule, we dislike the principle of levelling down, or taking from strong stocks to give to weak ones, as it is often much more profitable to unite the latter. The old adage is true of bees when perfect 'unity' is accomplished, for the 'strength,' or the power to labour and multiply, are increased more than three-fold by the union of two stocks. If the queens are of especial value, we often nurse weak stocks into strength in preference to risking the valued lives; otherwise we would unite under one queen and dispose of the other. We quite agree on the value of Bee houses.—Ed.]

NURSING WEAK HIVES.

Perhaps the important work implied in the above heading may be a source of annoyance to many bee-keepers. I purchased a stock of bees last April on the verge of starvation, hive, bees, and contents, barely 8 lbs. weight. I considered it profitless; and but for having pity for bees would not have purchased it on any account. Well, to plan! I got a tundish, and placed it over top of skep, and filled it with tea-leaves. I filled it up with syrup after nightfall. I listened attentively, when lo! I heard the merry tune of the queen. I continued at this during the whole of April, all the time admiring the notes of her majesty. In a short time it turned out one of the most prolific hives. A friend told me he fed a swarm he got from a hedge with new milk and sugar; and when May came he stopped feeding them with such, and one Sunday he went out, and as they were inactive he lifted up the hive, and found them spread upon the board quite lifeless. He brought them in, spread them before the fire, and dusted sugar amongst them. By the time he arrived from church the bees had resumed their wonted liveliness. He fed some time longer with cream and sugar, and they swarmed twice afterwards.

Well, now I never gave a bee one morsel since last October (adhering strictly to *Bee Journal* and its teachings). I bought a couple of hundredweight of sugar of course. I was the laughing-stock of the district, with all the bottles of syrup about the house. I was daily receiving reports of hives being dead, and of course they said, 'Your bees must be dead too,' and to further joke me they asked me had I got the 'faren' bees yet (meaning the Italians)? On March 8th my wife reported bees in splendid condition. They all flew about me, and I brought out a plate and covered it over with tea-leaves; and I had a bottle of syrup left, and I poured it upon the plate, and placed it in one of the onion ridges, 'And the creatures,' says she, 'they flew around me like chickens.' I put a lot of pea-flour in the crocuses, and one would think it was a swarm around me. I have them in good condition, although I never gave them food since autumn; but still I think it rather early for feeding yet. You'll awaken the ancients with your Bee Tent here in autumn, as I see a report from *Bee Journal* in *Wexford Independent*.—J. Traynor, *Tinahely*.

ARTIFICIAL HEAT, AS APPLIED TO WEAK STOCKS.

The last summer and winter have indeed been teasers to all engaged in the pleasant and generally profitable occupation of bee-keeping. But for the lessons I have learned from the *Bee Journal*, I should have had to bewail the loss of my five stocks, instead of being able to say four of them are strong as needs be at this season, and the other alive and able to give a kick, if required; though, through the severity of the season, and being weak in numbers, it has had a hard road to travel, and but for a little artificial heat, might have been eaten out of house and home by the stronger hives. This weak one is the product of the Carniolan queen, which I mistook for a Ligurian hybrid, and which was kindly presented to me by Mr. Walton last summer.

Knowing that by the many dead bees near the entrance to this hive that it had suffered much, I opened it with some anxiety to see if the queen had survived, and finding that she had, though with not more than a handful of workers, I commenced feeding with one of Mr. Hunt's quill feeders: but in this I made a mistake, and as to chronicle our mistakes is to teach others to avoid them, I give particulars. I ought to say that the hive had been well fed in the early autumn, and had plenty of sealed food. When I gave the food in quill feeder, the bees seemed to be much aroused; but not being able, from the smallness of their number, to take it up well, some ran on the board and attracted robber bees, besides the evil of dampness generally. This last, however, I corrected by changing floor-board; but the robbers still would come, though I narrowed entrance, and removed the feeding-quill, and the rightful owners becoming weaker, I tried another method. This was to heat some bricks in oven, and apply them over the hive. This succeeded to admiration, for after a few days I saw the marauders enter with much more caution, and some of them were dragged out neck-and-heels, and others held in the deadly embrace of the Austrians, who, though said to be gentle, like the Ligurians, are evidently able to hold their own. When I see them begin to bring in pollen I shall give them stimulating food again, but in small quantities at first.

My other stocks were very active in bringing in loads yesterday, and seem to be very vigorous. This may be partly due to the infusion of Ligurian blood, which I had from you a few years since, though from the bad seasons and want of experience I was only able to keep pure for one year; and now all trace, except the vigour above referred to, and a rather lighter tinge in the colour of the bees, is lost. I shall, however, try again, I hope under more favourable conditions, and with improved surroundings, in a year or so hence. I was very much pleased with the account of bee-flora, contained in the *Journal* for October last, and subsequent number. Can any of your readers inform me if Myrobella, or plum-cherry, which is so highly spoken of for fencing, would be of any value to bees? It is said that this flowers abundantly at the time the blackthorn does, and is a much more vigorous grower; and if so, would be at a time when help to bees, either in the shape of honey or pollen, would be most needed. I should also like to know what is the best way of propagating this hedge-plant, whether by seed or otherwise; and if our Editor could supply plants or seed, if required. I have forwarded my subscription to the Midland Counties Bee-keepers' Association, and suggested that one means of improving the stamina of the bees themselves would be the judicious interchange of queens among the members; or the same thing might be done with swarms where practicable, as I have heard that great mutual benefit would result from this practice, especially when the bees are brought from a distance beyond the reach of flight. Trusting you and all of us may have a fine season to compensate for the last.—C. SHUFFLEBOTHAM, *Coventry.*

ADVANTAGES OF A BAR-FRAME HIVE.

Having taken up the vocation of an amateur bee-farmer and a subscriber to your valuable *Journal*, from which I have learnt somewhat, and seeing you are willing to help the uninformed, I wish to know the chief advantages of a bar-frame hive above others, and whether nailing bars on to the top inside a common hive is any advantage to the bees building their comb; and, further, if they were lined with the comb, laid on with a hot iron, would they build to it? Also, will not holes, made about three-eighths diameter, in the adapting board for the bees to get through to the super boxes (about half-a-dozen in a space about two inches square) do as well as the slits which are generally used. As I find I have much to learn I shall be thankful sometimes to have your advice.—G. R., *Walcot Green, Diss.*

[The advantages of the moveable comb hive over those in which the combs are fixed are manifold, and include facilities for ascertaining the exact condition of a stock of bees at any moment, capturing a queen, proving queenlessness or otherwise, the prevention of over-swarming by the easy and certain removal of queen-cells, the excision or adjustment of drone comb, the cutting out or extraction of honey, the interchange of full and empty combs, the division of stocks, the removal of vermin, the detection of disease in its early stages, the enlargement or contraction of the brood nest, the ascertainment of a young queen's fertility, and a hundred and one other operations that are well-nigh impossible in a hive in which the combs cannot be invaded. Fixing bars to skeps with foundation attached would ensure the building of straight combs, and be helpful to a swarm, if placed an inch and a half (nearly) from centre to centre. Holes will do as well as slits for the bees; but the slits are intended to prevent the passage of queens to supers, and the spoiling of the latter by the breeding that would take place in them.—ED.]

BEES IN A FARM-HOUSE.

Some bees had established a colony at a farm-house (Church Hall, Paylisham), and the farm bailiff, considering them a *nuisance*, ordered the bricklayers to remove the plaster and lath, and after suffocating the bees, the mechanics took out with their *trowels* beautiful combs not less than 4 feet long and 1 foot wide. I am sorry I had not the chance of taking one of the combs and preserving it intact under glass for exhibition, &c.—DAVID KING, *Rochford.*

BEE-HOUSES.

Some time ago you asked for information about bee-houses. As I have had one in use for nearly twenty years, I think I understand as much of their advantages and disadvantages as most. Mine has a pointed roof, which turns off wet well, and will hold seven to eight hives, and when managed simply on the depriving system, is all that can be desired to those who have limited space. But when bars have to be removed, or any thorough examination entered into, it is very inconvenient, for though each hive has its own board, and the house opens fully at back, the hives have to be moved, which causes disturbance; and the bees who take flight are apt to go into other hives, which leads to quarrels, so that I should say, for advanced bee-culture, bee-houses are worse than useless, though to remove bees to a shed during severe weather is no doubt wise.*—C. SHUFFLEBOTHAM.

BEES IN KIRRIEMUIR.

This is a splendid country for bees, and used to have a large bee population; but now-a-days, I hear old people say, there is not one hive kept for ten that wont to be. One old farmer used, about fifty or sixty years back, to pay his rent off his bees. The honey produced is collected almost entirely off white clover and 'the bonnie bloomin' heather.' The last year and a half has almost blotted out the genus *Apis* from the neighbourhood altogether. Even the very humble-bees are comparatively scarce this spring. Small straw hives used to be the rule, but the owners of these, like Lord Ullin, are left lamenting 'their bees 're aw deed.' Most of the bees left alive are in bar-frame hives, and have been cared for under the new *régime* for some years. There are upwards of twenty bar-frame stocks in the parish just now, and five or six new school bee-masters. I think most stocks that have been attended to are prosperous. I know best about my own, and propose to tell a few of my own experiences.

* Moving bees during severe weather to a *dark* shed is not a bad practice, but they should be returned when flight is again possible.—ED.

In 1878 I began with four stocks. I bought one small swarm from Abbott Brothers that summer, and, though I have had 'ups,' I have also had 'downs' since then; so that this year I begin with only five serviceable stocks again. In 1878 I sold upwards of 20*l.* worth of honey, but last year I only sold 10*s.* 6*d.* worth. I think that my expenses for hives, apparatus, bees, and sugar at this date somewhat over my drawings for honey; but, viewing the returns as 'interest on capital,' I am exceedingly well satisfied. Laying all considerations about 'filthy lucre' aside, I still mean to go on with my bee-keeping.

Last season was very trying, as almost all my plans miscarried. I had some old queens, but I could not get young ones reared and mated to take their place; so they had to reign all winter. These have mostly done well too, while two of last year's mating have done ill, one dying, and another (an imported Ligurian) abdicated, leaving two square inches of brood and eggs to take her place. That circumstance somewhat provoked me. I found the queen cast out in a dying state one day, and but a small number of bees in the hive, while the hive next to it (a black one) was strong, and seemed to have been augmented by great numbers of Italians, no doubt from their yellow neighbour. Rats are said to leave a sinking ship: would this be the principle of their migration, think you? Since then a young Italian queen has been hatched from the brood left, but I suppose she will be too early to get a mate. I have bought seven yellow queens, costing me about 3*l.*, and this is the last of them again, the whole seven dying without issue.

Last September I bought a yellow queen. I caught the old black queen of a hive, and caged the new-comer in her place. In two days I went and released my prisoner. She took wing immediately, and flew off, and I saw her no more. On examining the hive, to see what could be the reason for her not going down into it, I was surprised to find a plump, healthy-looking black queen in it, besides the one I had removed before. I was not quite sure if she was fertilised, for I observed drones in good numbers; and I am almost sure some drones were in the hive all winter. However she is breeding now, but about a third of her brood is drones in workers' cells, and that scattered promiscuously through the nest. No wonder her yellow majesty absconded in September.

The best bee-plant I have is *Arabis alpina*. The bees work on it like they do on clover. The crocuses are neglected for it, and the meal-store which I have set up in an empty hive. I fill the hive with fine shavings (turnings I use), and raise the roof about 3 inches to allow the bees entrance below. I then sprinkle pea-flour on the top of the shavings, and the hive-roof keeps all dry. That is the most popular meal-store I ever saw. To teach the bees to take the flour I just dust a little of it on them at the hive-entrances for a few days, and they soon learn to go in search of it personally.—G. A. R., *Lintrathen, Kirriemuir.*

BEE-KEEPING IN IRELAND.

I am glad to see that the Bee Tent is going over to Ireland; great good will result I am sure. My pleasantest bee-keeping days were spent in Ireland, but I cannot subscribe to the puff by R. S., in *Daily Express.* Doubtless bee-keeping is in a very bad state in Ireland, but so it is in England. I would wager that if Ireland were canvassed on the subject, it would be found that the peasantry make a better return from their bees than the same number of their English brethren do. I have travelled over the bulk of country lying between Belfast and County Waterford, and it would astonish an outsider to see the quantity of honey that is grown. Of course it is not obtained in glass supers or sections, but in the old style, not the least portion being taken without smothering the bees. I know one gentleman in the County Wicklow who keeps from thirty to forty stocks in bar-frames, and whose intelligent gardener has been the means of doing a deal of good both among the neighbouring and distant peasantry, not excepting many small farmers. But what is the fact? How are the people to be taught improved bee-culture, unless by some neighbourly friend? There is practically no bee literature for them. The *Bee Journal* is comparatively unknown. I know I had difficulty in making out its whereabouts. I applied twice for its address to a London firm, and then did not receive it until I gave them a small order. The principal farming journal completely ignores bee-culture. The *Practical Farmer* (an excellent paper in some respects) gives a little help, but being from American papers, is not exactly what is wanted. If you would only take some steps to make your *Journal* better known throughout not only Ireland, but England, I doubt not but that you would be pleasurably surprised at the influx of subscribers, while at the same time you would become a national benefactor. Another suggestion I would make, especially to Irish bee-keepers, that they should, by inducing clergymen to accept swarms of bees (a small matter to an earnest lover of the science), and by a little personal attention, secure their proper management, and so enlist them in the promotion of the industry. Another plan would be for apiarians, who are members of Young Men's Christian Associations, to give an occasional lecture, illustrated with appliances of practical use, and I would vouch that bee-culture would soon become understood, and consequently appreciated; for in my opinion (which I trust you will pardon) the Irish peasant is a more intelligent being, more given to thinking, than his English brother. I am an Englishman myself, therefore I do not make this assertion from national pride, but truth compels me to do so. When I started bee-keeping (in Ireland) I expended during the first year over 26*l.*, but during the second year I discovered the *Bee Journal;* all was ignorance to that time, and by its aid and advice, instead of being all expenditure, I was enabled to turn bee-keeping to some account. I condemned all my previous purchases, and at the end of the third year, I was enabled to sweep off over 35*l.* of expenses, besides carrying forward 4*l.* 11*s.* 8*d.* cash, and 10*l.* 14*s.* 1*d.* worth of useful apparatus; from that time until the close of last year, I made bee-keeping a pecuniary success. Unfortunately at the present time I am bee-less, a state of matters brought about by change of residence, which compelled me very reluctantly to part with all my bees. In 1878 one of my stocks in a Woodbury hive returned me 5*l.* clear profit, but that was exceptional. I have only lost one hive by foul brood, not any otherwise. I have on every available opportunity shown my bees, and explained their management as well as I was able, to many people, often to the injury of my legitimate business. One word to brother bee-keepers. Advertise the *British Bee Journal* amongst friends and neighbours by every possible means. That is the lever that will help on bee-culture, for the people only want apprising of what national importance bee-keeping can become, to compel them to enter the field as honey producers, to help them to better their own condition, and keep the money in the country that is now paid abroad for very inferior honey and wax.—H. D.

[Our correspondent sent with his communication the name of a new subscriber, and has thereby shown, in the most practical form, his enthusiastic appreciation of our efforts as journalists, and his desire to spread a knowledge of bee-keeping; and if every one who has found help in our pages would do likewise, it would no longer be inferred that the *B. B. J.* is 'comparatively unknown.' Our *Journal* may be considered in the light of an educational work, helpful to those who desire to improve, but sneered at by the multitude who have perfect faith in their own knowledge; and before it will be appreciated generally as our enthusiast desires, the bee-keeping public have to learn the necessity for some such counsellor and guide. Advertising will not teach this,

but example will, and after a few more bad summers and severe winters, in which the self-satisfied lose all their bees, while those who follow the teachings of the *Journal* are enabled to preserve theirs alive, the bee-keeping public will have learned how little they know, and how much they have to unlearn, and then perhaps a knowledge of the existence of the *Bee Journal* would be welcomed, and advertising would pay. In the excellent American 'Gleanings on Bee-culture,' a writer on advertising says, 'There is no advertisement like a pleased customer,' and on such we rely for recommendation and help in our work.—Ed.]

Echoes from the Hives.

Honey Recipes.—I think it would add interest as well as be of value to your paper if you had a column set apart for recipes in medicine and cookery, where honey was an ingredient. Your readers being invited to send them in from whatever source found, whether written, printed, or either, care only being taken not to repeat the same twice. One of my family once made some very nice vinegar; I do not know whether others have done the same, or what the cost would be compared with malt-vinegar if made in larger quantities for the wholesale trade.—W. H. T.

Andover, May 19.—*Early Drones.*—'You were quite right about the hive of bees I mentioned in my letter of March 11th (which was hatching out drones in the middle of February.) It had a drone-laying queen, but the workers were so strong that I could hardly think it at the time. The hive is still in existence, but is now on its last legs.'—Capt. C. A.

Early Supering.—'On April 21st I put supers on two stocks, each of which when filled would contain about 40 lbs.; the bees immediately took possession, and began comb-building. On May 13th and 14th I had two swarms from the same weighing 7¾ and 6 lbs. each. The bees had built all the comb in one, and each super contained 14 lbs. of honey, a few inches of it being sealed.'—George Allen.

Hailsworth, April 26.—'I have lost all my bees, some forty stocks and swarms, by foul brood. I kept them in improved Woodbury hives. I have broken up my hives and burnt most of them, and given up bee-keeping in despair.'—Geo. F. Tabram.

Wired comb foundation, May 10.—'The wired foundation curls up as much as the English, but the bees gnaw away the bottom where it is not straight, which I have not found them do to the other. I have one frame built out and fuller of brood than any other comb in the hive.'—G. C. E., Bart.

Clifton Parsonage, Ashburne, April 27.—'I went away in the middle of February to the south of France, leaving my Ligurian swarm of last year in very good order after a month's feeding. Some time after I was gone my gardener took it into his head to drench them with syrup. The consequeuce is that I find the bottom of the hive a mass of dead bees and sugar, the door clogged up, and all the bees dead; stifled for want of air.'—G. A. F.

New Zealand Bee-keeping.—'A gentleman, Mr. Lee, explained to me about bee-keeping in New Zealand, as follows:—"You know (he says) there are good and bad seasons for bees as here. The year before I left I smothered three hives, and the least weighed 132 lbs., after deducting the weight of the packing-case, as that is the only hive used; but I have experienced seasons in which the bees didn't nearly fill them. We smother in February and March, and leave a few stocks, same as our own country people do. The bees swarm and hang out in a bush same as here (Ireland). We consume all the honey in the household. No such thing occurs as two crops in one year; we oftentimes hardly have one good crop. Bees don't gather honey all the year round as some people would make you believe."'—J. Traynor, *Tinahely.*

Hill Cottage, Falfield, Gloucestershire—Suggested Section Dividers.—'Would not the thin wood used for making match-boxes do well for dividers in sectional supers? It is very thin, and cut out by machinery at a great rate, so should be cheap.—H. Jenner-Fust, Jun.'

Bwlchbychan, May 21*st.*—'Owing to the cottagers about here keeping their bees in the old straw skep they have died by hundreds, and it was with great difficulty that I procured any. At present the weather is lovely, and we have had no rain for the past month. I hope by next summer to be able to report the formation of a Bee-keepers' Association, as the people are beginning to see the folly of their ways.—J. C. P. Vaughan Pryse.'

Nottingham.—Drones were first seen on May 20th, so that no swarms have issued yet, although the weather during the present month has been all that could be wished. April, however, was a cold month, and the progress made was not so rapid as we had been led to hope from the state of our stocks in March. All at present, however, seems to presage a good season both for bees and honey.—W. S.

Queries and Replies.

Query No. 336.—*Comb foundation.*—Is it safe to fill all the bars of a hive for the reception of a swarm with American comb-foundation (wired), or would it be more secure, and prevent curling, to tie thread across them, as described in a former number of *Bee Journal*?—G. Allen, *Orpington.*

Reply to Query No. 336.—It is supposed to be quite safe to fill frames with the wired foundation. We intended to give it a good trial this year, but by inadvertence every bit of it was sent out, and no more is at present forthcoming. Tying threads across can be no detriment to foundation or bees, and would be useful experimentally.—Ed.

Query No. 337.—*The bottle as an indicator of need.*—Last October, when feeding my bees with syrup from one of your bottles with three holes in the cork, they ceased to take the syrup. I could not see that it was candied. I therefore concluded that they did not want it, and that the syrup did not flow without the suction from the bees, and I recognised this as a valuable guide as to their needs. Now I cannot reconcile this with the fact that the syrup runs through the holes when one inverts the bottle before it is placed on the perforated zinc stage: ought I to infer from this that the bees cannot get it, because it is either too thick or candied?—K. C. J.

Reply to Query No. 337.—If the bees are in actual need, and do not take the syrup, it must be inferred that they are unable to do so either through its having candied, because they do not like it, or through their inability to reach it. If the bottle be quite full of syrup, there being no air within to become attenuated, it can be inverted and held level with the mouth downward without a drop of the contents running through the holes in the zinc or vulcanite with which it may happen to be covered, but if only partly filled with syrup, the air within will become attenuated in a greater or less degree, and a few drops of syrup will escape. When put upon the zinc-stage, if it be level not a drop of the syrup can

get out, and no air can get into the bottle unless a bee inserts its tongue, and sucks out some of the syrup, when by a natural law air will find its way in to supply the place of the syrup taken out. A feeding-bottle with uncandied syrup in it is but a poor guide to the need of bees, since, as a rule, they cannot withstand the temptation to take it and store it under ordinary circumstances if they can get at it. When honey is abundant they will naturally give IT the preference, and if several sources be open they will select the best. When syrup is candied, or very cold, they neglect it, though they may be in a state of starvation.—ED.

QUERY No. 338—*Returning Swarms.*—Not wishing to add to the number of my hives, may I return a first swarm to the hive? and must I take away the old queen before doing so, or let the two queens fight it out? It is so very difficult to find the queen in the swarm. I hope some of your contributors will give their experiences and difficulties with the zinc queen includer.—K. C. J.

REPLY TO QUERY No. 338.—A normal first swarm may be returned to the hive without danger to the queen, because there will be no other queen within the hive. Such swarms issue seven or eight days before the young queens which are maturing, hatch into life. Though swarms be returned as suggested, it by no means follows that they will not issue again, since having determined on swarming, and having raised queen-cells preparatory to doing so, the bees may insist on their maturing; otherwise, the young queen will be allowed to destroy them.—ED.

QUERY No. 339.—*Admission to Supers.*—Can you or any of your subscribers tell me which, after experience, is found the best, the side slot or perforated zinc (round or oblong hole) to place under supers? I myself incline to quarter inch space above frame with side slot in adapting-boards, with corresponding bottom to super, and why should not the top bar of hives be made of such a width that the intervals between them should admit workers and not queen to supers?—S. NICHOLL.

REPLY TO QUERY No. 339.—We have many times shown that bees prefer to store their surplus honey at the farthest point from the entrance of the hive; and in an article on supering in this *Journal* have again referred to it. It is quite useless for writers, however great their experience, to lay down any absolute rules for others' guidance, for since 'bees do nothing invariably,' the rules do not always apply, and are therefore often looked upon as whimsical. Some writers assert that honey is always stored in the coolest part of the hive, others will as strenuously assert that bees prefer to store it on the top, which is the hottest (next to the actual brood-nest); and thus opinions vary, and the public are left in a state of incertitude. Our dictum, however, helps to reconcile these opinions, and we have little doubt but that admission to supers at the back or beyond the brood-nest will be generally most acceptable to the bees; and whether excluders be used or not, will offer the least inducement for the queen to enter them. Top bars of wood are liable to expansion, contraction, and warping, and cannot be relied on as excluders in the ordinary sense. We hold that the quarter-inch space is unnecessary, and often hurtful as permitting the loss of heat. Others differ in opinion, but we cannot help that; our argument is based on the bees' own works, and their protest against the conveniences which humans offer them, and they as persistently reject.—ED.]

QUERY No. 340.—*Prize for Non-swarming Hives.*—Why do people go on talking and advertising non-swarming systems to the delusion of novices, when they know perfectly well that there is a prize offered which has never been taken for any such system?

Ammonia for stings.—Mr Jenner-Fust recommended some time the strongest ammonia for cure of bee-stings. I should like to caution those who have not used it, that if they apply it to eye, nose, or lips, they may find those members skinless.

My bees have prospered. I have lost none owiug to the winter. I took 14 lbs. of honey yesterday, May 21st, from one hive, and two frames from a second, and might have taken six times as much.—S. NICHOLL.

REPLY TO QUERY No. 340.—A great writer and philosopher has described our thirty millions of population as 'mostly fools;' and though we do not subscribe to this entirely, we cannot shut our eyes to the fact that a very large number of the people are ever ready and willing to be gulled, and that there are 'hawks' and 'cormorants' mostly on the look-out for them.

We should be glad, however, if our correspondent will furnish us with the particulars of the challenge prize he mentions, and the conditions under which it is offered, as we are by no means certain that such a hive cannot be produced if it is not already in the market. The warning to those inclined to use ardent ammonia will doubtless have due weight.—ED.]

NOTICES TO CORRESPONDENTS & INQUIRERS.

BWLCHBYCHAN.—The bees being weak should be fed, and that robbing may not be provoked it would be better done at night, and so leave the bees free to work during the day. Newly purchased weak stocks are not, as a rule, very promising, but their being so helps to bear out our suggestion, oft repeated, that people are not fond of selling their best. It would have been better to have purchased new swarms. Being weak it would be better not to transfer them at present, but nurse them into strength by feeding, and transfer about twenty days after swarms have issued from them. An orchard screened on the north and west by spruce plantations should be an excellent position for an apiary, provided the country around is productive.

DARK COMBS.—The dark colour of combs is caused by the breeding which has taken place in the cells. Every young bee during its transformation spins a silky cocoon around itself, which, when matured, it leaves behind in the cell. These, though almost as 'thin as air,' accumulating in the cells, tinge, darken, and blacken them; but it takes some years of successive breeding to render the cells too small to be serviceable. One year's breeding will turn white comb to very dark brown.

G. R., *Diss.—Second-hand hives.*—Our caution was in respect of purchased hives; if one is certain that his own contain none of the germs of foul-brood or other deleterious growth, he can use them if he chooses to do so, but in all cases a thorough cleansing cannot be other than beneficial. To keep down drones and queens, the bars are inefficient; and if they were widened to narrow the passage way between them, warping, &c. would render them ineffective. For information on the quilt, see Index. The Warder system of storifying by mounting full stocks on empty hives, and removing the tops when the harvest has ceased, is out of date, as the honey taken, having been stored in brood-combs, is too often mixed with pollen and other impurities; hence the reversal of the system now called supering. The feeding-stage need not be removed until you intend to put on supers; the 'cushion' laid on will keep the bees warm. The smoking apparatus should be charged lightly with dry material, cotton rags will do, a lighted fusee applied, and the bellows set to work. The neighbourhood of Diss is fortunate in having lost so few bees.

THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

[No. 87. Vol. VIII.] JULY, 1880. [Published Monthly.]

Editorial, Notices, &c.

JULY.

Prospects brighten, and there is fair reason to hope that a good honey harvest will set bee-keepers rejoicing. Already we hear of the removal of well-filled supers, and of vast quantities of honey having been obtained by the use of the extractor; and with the limes and clover in hand, there is room for rejoicing. The weather during June has been kindly on the whole, though its first ten days were not encouraging, and sharp frosts did much damage to tender crops; but since then there have been sunshine and rain, which have promoted the growth of vegetation, and much honey has been secreted, and, we are glad to repeat, secured. Notwithstanding the terrible experiences of the past two years, we are glad to be able to report that the interest in scientific bee-culture is rapidly increasing, the country at large being apparently fully awakened to its importance, not only as a paying industry, but as the *sine quâ non* to the preservation of the busy insects. Doubtless the bad times which have visited the careless and dilatory have tended to this, but much, we are assured, is due to the efforts that have been, and are continually being made to promote and extend a better knowledge of the art than has hitherto prevailed. Clubs and associations are everywhere springing up, and taking firm root in the land; and bees, hives, and honey, are now attractions as exhibits at most of the local and many of the county and national agricultural, horticultural, and floral exhibitions. Patronised by the nobility, and earnestly fostered by the clergy, who are ever to the fore in promoting whatever will conduce to the corporal as well as spiritual welfare of the community, bee-culture may be now said to have taken its true position with its sister sciences, and we have every faith that its recognition as a lucrative and cheap source of income will be permanent.

WHAT TO DO, AND HOW TO DO IT.

Supers and their Removal.—Honey being now plentiful, and supers nearly fit for removal, it is often a question whether to leave them to be completed, or to add to them, and thus give the bees full scope for their power of collecting it. There can be no rule laid down in this respect because of the difference in the honey-yield of the various localities, the power, *i.e.* the comparative strength of the colonies, and the duration of the harvest; and therefore every bee-keeper must make a law for himself. When it is desired that supers should be completed outright, for exhibition purposes, it will be unwise to disturb them, but additional space may be given above them if the yield of honey will warrant it. In giving additional space for honey-gathering, it is better to put a second set of supers above the first that are being filled in preference to the common practice of raising the latter and interposing the empty ones. The last-named may ensure additional comb-building, but it will often be at the expense of the honey in the top super. Those using sectional supers may remove the central sections as soon as they are completed, the partially-filled ones being closed up, while additional sections may be added to the right and left of the latter, but on no account should empty sections be placed between them unless for experiment. Sectional supers should be cleared of bees individually; a little smoke, that from smouldering 'touch-wood,' is least likely to suggest an unpleasant taste, should be blown into them or between them and the hive, and in a minute or two they may be parted and taken away, each being brushed clear of bees, and wrapped in paper to prevent other bees attacking them. A bunch of grass will make an excellent brush for the purpose. Larger supers, after the smoking, must be lifted bodily and carried away; and if inverted and gently tapped, the majority of the bees will 'boil' over their edges or out of the entrance-holes, and should be brushed off while they are being carried. They should then be

put in a cool room or cupboard, protected from bees, and so arranged that their occupants can get out of them, which they will do gradually as they become cold, when they may be brushed off, and set at liberty. Another plan is to put the supers into an open box covered with a sheet, and as the bees congregate upon the latter, turn it over leaving them to make their way home. A third plan is to put them into an empty hive, the entrance of which is guarded by a bee-trap that permits of bees coming out, but prevents them re-entering.

Extracting Honey.—When comb-honey is not principally the object, vast quantities of liquid honey may be obtained by the use of the extractor. In good districts, with plenty of combs in the hive, bees will store it rapidly, and it may be extracted in keeping condition at intervals of a few days. Newly-gathered honey is too thin and watery to keep well; it is liable to ferment and become sour, and should not be removed in that condition; but where the bees have begun to seal it over it may be taken forthwith and bottled for store or for market. To give the bees facility for storing, it is a good plan when a stock has swarmed to stand the latter in the place of the former, and towards evening shake all the bees out of the stock, and thus strengthen the swarm, and set the hive of beeless combs upon another strong stock, taking care to remove all queen-cells. The hatching brood will then increase the population of the doubled stock, and the bees will find room for storing without the waste of comb-building, and extracting can go on merrily. The swarm, if provided with full sheets of foundation, will be fit for supering in about ten days.

Stocking Nuclei.—One of the simplest ways of doing this, for queen-raising purposes, is to take a queen from a strong colony, and having placed her in a new hive, set it in the place of the former, which should be carried to the stand where nucleus No. 1 is to be formed. All the old bees will then desert it, and, joining the queen, a swarm will be formed which can be dealt with in any way thought proper. The next day or the following the nucleus can be formed, one frame of comb and brood, with a frame of comb containing honey and syrup on each side of it will be sufficient, the stock-hive being carried to a third position. On the succeeding day the operation may be repeated, and so on from time to time until only a nucleus remains. This method is subject to variation as to time according to the strength of the colony. A quicker method is, after having rid the hive of the old bees as first suggested, fit up a sufficient number of nuclei with brood-comb from other stocks, and then, carrying the hive first mentioned to each, divide the young bees within it (which have not flown) amongst the nuclei, after which the beeless combs and hive may be returned to their own stand, and the old bees and queen re-admitted. The nuclei may have queen-cells given to them after twelve hours.

Shading Hives.—Shade is important during hot sunny weather, as without it hives may become so hot that the bees will fear to work in them, and the combs may melt and break down. When operating on a hive the sun's rays should be prevented from striking upon the frames, and the hive-cover should not be left off for even a few minutes. A splendid stock of Ligurians of ours was once utterly ruined in a few minutes from the neglect of the last-named precaution, the combs softened and fell in a heap in the hive, the honey ran out of the entrance, robbers came, and in half-an-hour the bee-garden was a scene of the wildest confusion, and the excitement continued for days.

Water for Bees.—This has been peculiarly essential during this spring and summer, and to meet the necessity we have mounted two kilderkins of it on bee-stands in different parts of our garden, so arranged that the water drips from a spigot into a bowl full of pebbles. One large stone the size of a cricket-ball receives the drip which splashes over the pebbles, and all excess runs over the bowl into a hole filled with shingle into which it is bedded. Thus there is always a good supply of well-aerated water into which the bees cannot fall, and they may be seen by hundreds daily partaking. Prior to this they visited water-butts and dirty pools, and many were drowned if not rescued from their unwelcome bath. The 'Renfrewshire Bee-keeper' has provided a valuable watering stage, and has presented us with one—a handsome glass vase with elegantly chased pattern, too beautiful for use in exposed situations, as may be inferred from the wood-cut on another page. The stage is a most welcome acquisition, and will doubtless be much in request, as, with the aid of a tin shovel, it may be surmounted by an ordinary water-bottle in the same way that the syrup is put upon an ordinary feeding-stage.

After-swarms or Casts.—These usually come forth about nine days after first swarms have issued; they are subject to no rule, but issue at any time of the day, and in almost any kind of weather. They are headed by young queens, three or four of which will sometimes be found in a single swarm, or they may be separately attended by a small retinue, and form separate clusters. Several casts may thus appear simultaneously, or they may issue at intervals extending over several days. Sometimes a stock attempts to swarm, and its mother-queen, through defect of wing, falls to the ground and

is lost; or a queen may die near swarming-time from other causes, and swarms issuing from these will be in the nature of 'casts;' and though they may be very large, having young queens they will be subject to all imaginable vagaries. All swarms with young queens should be hived separately, for the time being at least, or the young aspirants to the honour of matronly governance may quarrel and decamp with their respective adherents (an eventuality to which casts are especially liable); and in the evening they can be dealt with as circumstances determine. If they are not wanted as a means of increase and at nightfall they be returned to the parent hive, the young queens will fight out the question of supremacy, and, as a rule, the hive will not 'cast' again. If, however, they are required for increase of stock, they may be left to fulfil that end alone, or they may be united at dusk, as from their relative strength may seem advisable. In returning casts to the parent stock it is only necessary to shake them out in front of the entrance on an extemporised stage, or having set the hive on the ground to throw them near it, so that they can run in.

Bee Flowers.—We cannot refrain from remarking on the great assistance that our bees have derived during the spring months, and up to now, from that hardy perennial Arabis alpinus. Commencing with its silver blossom ere the crocuses had begun to decline, it gave useful occupation to our bees from the beginning of March to the end of May, when it began to decline; and even now there are many tufts in flower. As a bee-flower it cannot be too highly spoken of; and as it will grow almost anywhere and requires no cultivation, we specially recommend it. Following it we have the excellent flower so prominently mentioned by Mr. Ingram of Belvoir Castle, as specially valuable for bees, the Limnanthes Douglasii. It is an annual of dwarf habit, bearing a profusion of white flowers with yellow centres, like huge buttercups with white outer rims. It is perfectly hardy, and sown in autumn it has bloomed with us during the whole of June, when practically there was nothing else (save the arabis) for the bees to gather from. How long it will continue we cannot tell, but its blossoms stand literally in heaps on its foliage, and the bees revel in the feast of honey and pollen which it affords. It has won its way to our affections at the first trial, and we have little doubt but that it will become a general favourite. Wall-flowers have done their usual good service, and are great favourites. Through April and May they were a glorious treat; and our old favourite, the mustard, is in grand form at the present time. We cannot too strongly recommend these few things to the attention of bee-keepers as yielding a supply at intervals when there is no other general crop. Crocuses first, then Arabis and Wall-flowers, next Limnanthes Douglasii, and then mustard. The first for early spring, the next two before the apples, and the remainder between the apples and the white clover and limes. Old cabbage-stumps laid in by the heels afford also capital help in the last-named interval.

Unexpected Swarms.—It is not uncommon for swarms to issue unexpectedly, and it would be well to keep an eye upon all shrubs and bushes in the bee-garden, particularly on those on which swarms have previously clustered. However safe one may feel in regard to one's own bees, an apiary is attractive to swarms from other hives; and unless followed and claimed they become the property of those who hive them.

CYPRIAN AND HOLY LAND BEES.

On Wednesday, the 2nd ultimo, there was quite a gathering of notables of the Bee world at 115 Cannon Street, to greet Mr. D. A. Jones and his importation of queens prior to his departure on the following day for Canada. Amongst the visitors there were Sir John Lubbock, M.P.; Rev. Chas. F. Deene, New York; Mr. Terry, British Museum; Mr. McLeod, Science and Art Department, South Kensington Museum; Major-General H. A. C. Hines, Mr. A. D. Bartlett, Zoological Gardens; Mr. Hunter, Mr. Cheshire, Mr. Neighbour, Mr. Hooker, Mr. Robarts, Mr. J. P. Jackson, and Mr. C. N. Abbott. A letter from the Baroness Burdett-Coutts, and a telegram from Rev. H. R. Peel, were received, regretting their inability to be present.

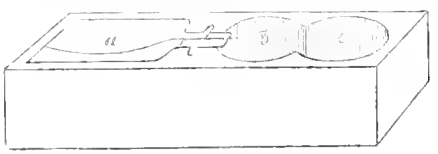
Mr. Jones gave a lively and interesting account of his journey and experiences while in search of the bees, and exhibited numerous bottles containing specimens of bees and other insects captured on the route, the bees being intended for microscopical investigation by Professor Cook in America. Mr. Jones took with him the bulk of the queens that he brought with him from Cyprus and Palestine, but stated that arrangements had been made by which a second consignment would reach our office at Southall in about a fortnight from that time;—but up to the time of writing we have had no tidings of them.

On July 11th we had a parcel by post from Mr. Frank Benton, of Cyprus, who is there acting for Mr. Jones, which contained a queen and about thirty workers. Mr. Benton wrote:—

'No doubt Mr. Jones has told you that we have succeeded in securing about two hundred colonies, mostly Cyprians, and twenty Syrians. I have about three

hundred young queens, a few of which mated before I had destroyed all the Syrian drones. One of this sort I will send you by this mail as an experiment. Please tell me by return how she arrives, how much water is consumed, how much sugar, and number of dead bees, &c.'

The Travelling Cage.—The cage in which the queen was packed was a model of simplicity and perfection; it was made out of a block of wood about five inches long, one and a half wide, and an inch thick. Near one end two holes, an inch and a quarter in diameter, had been bored, so as to cut into each other, as *b* and *c*, and at the other end an excavation had been made to receive a small phial, *a*. The phial was fitted with a cork, into which a notch had been cut, and in which notch a few inches of cotton-string had been placed, so that when filled with water the bees could suck the moisture which flowed by capillary attraction along the string, one end of which protruded from the cork into the cavity at *b*. The other part



of the cavity (*c*) had been filled with hard dry sugar, poured in while hot (not barley-sugar), and both the top and bottom of the block were covered with fine woven wire. The queen and bees were put in the cavity *b*, so had a supply of water on one side, and a solid lump of sugar on the other; and this arrangement most admirably fulfilled its purpose. It is well known that bees when alarmed by jolting, as in travelling, partake inordinately of sweets if they can get them, but by the arrangement described they could not take the sugar until they first moistened it with water, and thus their natural impulse was curbed, and they only took as much of both as they actually needed for their sustenance.

Mr. Benton continued in his letter:—

'It will be quite an easy matter to send bees by express as far as England, but by mail it is doubtful I am aware, as the bags are sealed and put into the hold of the vessel that carries them.'

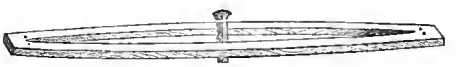
Nevertheless, though sealed up in the mail-bag, and buried for ten days in the hold of the vessel amongst tons of letters and packages, the queen and her retinue were delivered at our office with only one of the number dead, her majesty and the remainder of her fellow-prisoners being in splendid condition, without a speck to suggest dysentery or ailment, and as clean and lively as one could wish. The quantity of water consumed was barely a teaspoonful, and the sugar, of which there had probably been two ounces, was about half consumed. Of these facts we at once informed Mr. Benton, and also thought it right to tell him that British Postal Authorities would not permit the transit of live bees, or of bottles through their offices, *if they knew of them being enclosed.*

Enthroning the Queen (with old bees).—No sooner arrived, and admired to the full, than it became necessary to introduce the royal lady to her future people. Of pure Cyprian breed, and probably mated with a Syrian drone, to say nothing of the interest attaching to her as the first that had been delivered by postal route, we were specially anxious to preserve her; but our apiary had been so cut up, to furnish 'early' swarms (which everybody wants), and so many hives were occupied in hatching Cyprian queen-cells, that we were compelled to dethrone a black queen from a swarm of sixteen days old to find a suitable following for her majesty of ancient race. Knowing that in this hive there were no hatching bees, and that consequently there was a probability of the queen being encased when she was set at liberty, we did our best to dull the sensibilities or caprice of the bees with tobacco-smoke; after which we laid the cage and its contents over the feed-hole, and covering it with quilting, left it for three days, in the meantime giving an occasional whiff to distract their attention. On setting her free a sprinkling of scented syrup was given with the same object; and an hour afterwards, on examining the hive, we found her, as we feared, rolled up in a tight ball of bees, from which it was difficult to release her. She was, however, wonderfully lively and vigorous, and was then placed alone in one of our own cages (p. 7, vol. viii), and to insure her against starvation a bottle of syrup was placed over it, and in twenty-four hours a second attempt was made to enthrone her, with the same result; and not until after five trials, with and without smoke or scent, each carefully watched, was she permitted to occupy the vacant throne.* She is now 'as happy as a queen,' and her first progeny will be bred in combs built on Abbott's Flat-bottomed Wooden Foundation, all as straight and true as is possible. The record of the difficulties attending her introduction will, we hope, be valuable to the inexperienced as another warning that old bees will not readily accept a new mother-in-law.

* From force of habit we write and speak of queens as being enthroned, and reigning over their subjects, but in reality they do nothing of the kind: they are simply the mother bees essential to the well-being of bee families, and therefore objects of the greatest solicitude amongst them. We have strongly urged that the true relationship of the queen (♀) to the bees should be explicitly defined in the Association's coming *Handbook for Cottagers*, and have every reason to believe the suggestion, which has also been frequently made by Mr. Cheshire, will be adopted.—Ed.

ABBOTT'S NEW FLAT-BOTTOMED FOUNDATION.

The immense demand for foundation, coupled with its apparent scarcity, put us aground for home consumption, but having succeeded in making it upon wood, we tried our machine in the manufacture of it from wax alone, and are turning out what we have every faith will give satisfaction. It is flat-bottomed, and has thick cell-walls, containing sufficient wax for their completion. It is very strong, and will not warp, 'sag,' or break with any weight of bees likely to be clustered upon it. A newly-made strip, a foot long, and not quite two inches wide, bore a weight of 3 lbs. without injury, but 3½ lbs. broke it. Possibly it may be thought that there is an excess of wax in it, but that is not worth considering if it can be produced cheaply, is acceptable to the bees, and can be used with confidence without the necessity for artificial support. As regards the cost of production, sheets to *fill* Woodbury frames will average 6*d.* each, all wax, no wire, or wire supports, no hair or fibre, indeed no *impedimenta* of any kind, and the frames may be filled with it to within a quarter of an inch of the bottom rail, and left with safety, provided they have been secured at the top. We mention this as a *sine qua non*, because in fixing foundation to the top bar, many bee-keepers use wax that is only half hot, which is not safe until the bees have fixed it, but with this foundation, if it be properly fixed by the bee-keeper, it will be independent of the bees, and they may begin elongating the cell-walls in whatever part of it they please. We are not supposing that a single frame of it will be put alone into a hive, and a full swarm of bees made to cluster upon it, perhaps unevenly, as then it might be made to bulge, but if fairly used, as many frames of it are being used, as the bees can cover, no evil can properly arise, and in a very short time it will be converted into beautifully even worker-comb. As regards its acceptance by the bees, we must confess to having been somewhat startled. A swarm was received from Suffolk at 8 p.m., we had only seven full frames of comb to put into the hive, and the eighth was filled (nearly) with the foundation; there is an idea that giving fully worked combs is a great help to the bees, and probably new combs are an acquisition, but this swarm preferred the foundation, and in twenty hours had built it out nearly to the full, and the queen had well stored it with eggs, while, curious to say, not an egg was to be found in any other of the combs. Experimentally a frame containing it was put into a stock from which a swarm had been taken, and in which queen-cells were being raised, and in sixteen hours the bees had half completed the cells, every one of which was of worker size. It is extraordinary that the queen of the swarm should prefer the flat-bottomed, partly-formed cells to the fully-built natural ones, but such is the fact, which we will leave theorists to explain; and the experience has determined us never again to use old combs, while we can rig out full frames of foundation so thoroughly acceptable for 6*d.* each. Combs that have been used are always objects of suspicion to the experienced, now with us they will be tabooed, and swarms, casts, foul-broody bees (after quarantine) and condemned bees in autumn, will be furnished straightway with new ones, *i.e.* foundation from which in a few hours they can make them. In fixing it to the top bar, we would recommend that the old-fashioned saw scarf be re-adopted, the frame-bar to be



sawn through from end to end nearly, a nail or screw-driver to be then inserted, and the foundation slipped into the opening thus made in the bar, when by withdrawing the nail the bar will close upon the foundation, and hold it securely. Failing appliances of this kind, the foundation must be securely waxed to the top bar, or safely fixed by other means, when it will be ready for the bees.

THE BATTLE OF THE HIVES.

For several years in the past, it pleased Mr. A. Pettigrew, the champion of straw skeps and fixism, to issue an annual challenge to frame-hivists, to try the relative merits of the skep with fixed combs, *v.* the frame-hive, in which the combs are moveable; and although we accepted his challenge, and expressed a ready willingness to enter the lists with him, he eventually declined the contest, and the trial has never been voluntarily made. It is, perhaps, well, in many respects, that it did not take place, for victory on either side might have been attributed more to personal cleverness than to either principle of management, and the lesson might therefore have been valueless. On the other hand, could it have been so managed that success on either side would have been convincing, the trial might have been a real blessing to those who have looked to their bees for the means of providing additional comforts at the wane of the year, and perchance many thousands of hives now tenantless might be overflowing with life, and the productions of their happy occupants. There is an old saying, that 'what is to be, will be;' and though the friendly trial thirsted for, at least on our side, could not be amicably

arranged, the two systems have been put upon their merits by a superior Power, which has taxed the cleverness of individual bee-keepers to an unprecedented extent. Instead of a duel with the partisans of the combatants on both sides as observers, it became necessary for every man to look to his own safety, for the elements had waged war upon them indiscriminately, and tried the resources of every one to the utmost. For two years the weather has been more adverse to bees than has ever been known for a like period, and bees, hives, and systems have all been on their trial, with a result that has convinced thousands of bee-keepers of the advantages of the moveable comb hive, and the improved system of bee-culture, and left only too many with a legacy of empty skeps and sad experiences.

Frame Hive Management.—The superiority of the moveable comb system of bee-keeping being thoroughly established, and the demand for frame hives having multiplied a thousandfold, it may not be out of place if we offer a few suggestions as to their uses. Experts write and talk glibly of manipulations; and at the shows such splendid results are exhibited from frame hives, that intending bee-keepers are captivated at once, and determine to adopt them, though often they have not the faintest notion of the purposes for which their several parts are intended. For their information, then, we would say that a frame hive is composed of a body box, containing a number of frames, a floor-board, a quilt, a roof, a porch, entrance-slides, and a stand.

The body-box, as usually made, is intended for the bee-nest, and it should be of a size to suit the requirements of the bees, and of the locality. In good honey-yielding districts the bees will breed much more extensively than in poor ones, and for this reason hives are made of various sizes, and some are of an expansive nature, the brood nests being capable of great expansion or contraction, being calculated to meet all emergencies. The frames are designed to hold the combs, and each being fitted with suitable guides, or with sheets of comb-foundation, and placed in correct position, the bees build their combs in them, and they are then 'moveable,' and hence the hives take their name. The floor-board, when received with the hive is usually found nailed or screwed to the bottom of the body-box, or it may be otherwise secured, but as a rule, it also is intended to be moveable, to give facilities for cleaning or exchanging it when from any cause it becomes dirty or wet. The quilt is composed of several layers of porous material, separate or sewn together. It is intended as a covering for the body-box, to keep the brood-nest warm, yet to permit of the escape of the moist vapours engendered within it, that condensation and consequent dampness may be avoided. It is applied close upon the frames, and to prevent the crushing of any bees that might be upon them, it is usual to have the first layer of a very light material, that the bees may crawl from under, when it is laid upon them. To facilitate their escape from the danger that thus threatens them, the first layer, usually of sheeting or ticking, when put upon the hive, should be gently moved backward and forward across the frames until every bee has gone down between them when it (the first layer) should be smoothed down closely upon the frame-bars,* after which the remainder of the quilt is laid upon it. When feeding becomes a necessity, a small hole must be cut clean through the quilt, between two of the bars, and a feeding-stage put upon it. In cutting the hole, we would advise that it be made an inch or two on one side of the centre, as then, by reversing the upper thicknesses of the quilt, it can readily be covered without additional material or by turning the whole round, the feed-hole can be brought to a different position over the frames.

When supering is necessary the quilt is usually removed, and an adapter put in its place, in which case, if the apertures through the adapter be not covered by the supers, the quilt, or part of it, folded to a suitable size, should be laid on them. Those who object to adapters, and who do not cover the whole of the frames with their supers, should act similarly with them; or they may, if the super be of peculiar shape, cover the exposed parts of the bee-nest with bits of carpets cut to fit, laying a heavier material upon them to keep them flat, and to prevent propolising and the escape of bees. During the summer, covering the quilt with impervious material will not do much harm, but in the winter or in cold weather it will be exceedingly hurtful, as the vapours of the hive will condense beneath it, and the quilt will become wet, mouldy, and rotten. The quilt, simply, is at all times the best covering for brood-nests, and should give place to nothing but supers, unless a chaff-cushion, which we hold to be only another form of quilt, be preferred. In winter a hot-water tin, or india-rubber bag, is sometimes laid upon the quilt at

* This is of more importance than at first thought would appear. If there are any wrinkles or hollows in the quilt through its not touching the frame-bars, the bees will fill up the little spaces with propolis, and in doing so will force so much of the 'glue' into them that they will sometimes raise the quilt along the whole frame, so tightly do they cram it in. Large quantities of propolis are thus often found between the quilt and the frame-bar, which must have given the bees immense labour, and cause annoyance and disgust to the bee-keeper, for bee-glue is not pleasant to handle.—Ed.

night to warm up the hive, and give the bees, during a long spell of hard weather, an opportunity of changing their position; but it should always be removed before it gets cold, or condensation will take place beneath it. Excluding adapters are not essentially part of the hive, for many bee-keepers do not approve of or use them: but those who use them in the usual form, chiefly composed of long-holed zinc, would do well to keep them on the top of the quilt to keep it flat, and prevent the bees lifting its edges and escaping. The roof of a hive, as may be inferred, is to shelter the body-box from the weather; but it is often made with a deep compartment to afford room for supers, or for a feeding apparatus between it and the former. Hives that do not comprise this addition should be furnished with them when supering or feeding is necessary. To do this four pieces of board are required of the length of the hive sides, and all of the same width, which, when nailed together, will form a 'raise,' the height of which must be equal to the height of the super or feeding-bottle. It is highly important that the roof of the hive should be weather-tight, *i.e.*, impervious to rain and snow; but it is essential that the air should play freely between it and the quilt to carry off the vapours that arise from the hive, otherwise the inside of the roof will become wet with condensed moisture, and the quilt so cold that it also will become wet from the same cause and be injurious.

The porch is a most useful adjunct to a hive to prevent rain and snow from entering it, and to protect the sentinel and outlying bees from the intense heat of the sun, and from sidelong winds. Previous to a thunderstorm the heat often causes the bees to lie out in large clusters, and, but for such protection, the pelting storm might drown them by thousands. The entrance-slides are most useful for contracting the entrances in cold or windy weather, and should be well regulated, for in this precarious climate a sudden change might do great harm if the entrances of hives remained wide open.

The stand is an important feature in hive arrangement, but it need not be an expensive one. There is no better arrangement than that which in the form of four stout spreading legs gives firmness, and prevents the body box being blown off, a casualty to which it is liable when it and the stand are separate. Hives with fixed legs, as stands, usually have an arrangement by which the floor-board can be removed without disturbing the body box, and this is a valuable aid in management; but, except when the floor-board is lowered, to give ventilation (or for removal) it should be wedged up, or made to fit quite close to the body-box to keep out vermin, and robbing bees, and prevent injurious draught.

Supers, nadirs, and ekes do not form part of the hive proper, and as they are special will not be discussed here.

There are, however, many specialities in and for hives that ought to be mentioned, not the least important of which is the division-board or dummy, as it is often called. Many hives are not fitted with it, as many bee-keepers do not care to pay for what they can extemporise, but there are hives of which it forms a leading feature, as with it the breeding space (the bee-nest) can be enlarged or contracted to suit all contingencies of weather, locality, and strength of colony. A divider, or dummy, may be quickly made by nailing a piece of thin board to the side of a frame, so that it shall fit across the hive parallel with the combs, the frame itself being filled with straw cut to the proper length, and held in position by fine wires drawn and tacked across it, or it may be filled with felt or other warm material, or covered with thin board on the other side to form a dead-air case, either side of which may be turned to the brood-nest. The division-board is for use at all times when the preservation of heat is necessary, that being its chief function: but for winter use it is often displaced by a flat cushion of warmer, *i.e.* less conductive material.

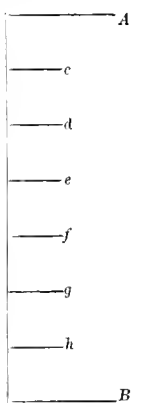
Queen-excluding dividers are also used by many bee-keepers, and with the dummy are special features in Abbott's Combination Hives, which are constructed for receiving surplus honey in frames or sections at the back of the brood-nest. Excluding dividers may be made by slipping sheets of Abbott's excluder zinc between the frames, thereby shutting the queen from the frames or sections which are set apart for honey only, and preventing her from spoiling them by the introduction of brood. They may also be used to enclose the queen upon one or more frames of comb whenever it may be desirable to limit the extent of her breeding, so that during a glut of honey the bees otherwise necessary at home as nurses may be free to work as gatherers. They may be further used to enclose and separate combs which contain queen-cells, that the firstborn may not 'run a muck' on her sisters and slay them, and they may also be used to delay, if not entirely prevent swarming at undesirable times, for if placed near the entrance across the hive (in hives of the pattern named) the queen cannot escape, and, as is often the case, lead a swarm away when 'nobody's looking.'

Comb-Foundation.—This is now recognised as of the greatest importance in profitable bee-culture, and many minds have been exercised on the best means of so applying it that the bees may have full sheets of it to raise their

combs upon without its becoming distorted, by stretching unevenly or breaking by the weight of the bees when they first cluster upon it. Being liable to this it was for a long time used only as guides; then it was found that by suspending a full frame of foundation between others full of comb; the former was built out in safety, and presently it was shown that by incorporating thin wire in its manufacture (to be afterwards pulled out) it was built without stretching; and a year ago in this *Journal* we recorded an experiment that was highly successful, to wit, that instead of wire being wrought in the foundation, if sheets of wire-netting were suspended between the frames containing it, the wire would bear the weight of the bees (as the full combs did above mentioned), and the foundation built out correctly. The next step was the production of flat-bottomed foundation with hair-like wires worked up in it which were to remain, for, being embedded in the wax, it could do no possible harm, and greatly to the surprise of the scientific world the bees adopted it, showing that the angular shape of the cells' base, as they build it, was not *the desideratum* with them. Following the hint, and anxious to produce unbreakable as well as inelastic combs, we tried the effect of wax upon wood, and by perseverance caused the bees to build their cells upon thin sheets of wood which had been simply dipped in wax, and finding that they bred and thrived in them, we became anxious to form foundation upon wood, and freely ventilated the subject in these columns. We at length succeeded in producing what we desired, and our first experiments with it filled us with delight; presently, however, they were failures, which were puzzling, but they are now overcome to our entire satisfaction, and we hope to show what the bees will do with it at the coming exhibition at South Kensington. In the meantime we decline to vend it except for experiment, as we have had no experience with it for wintering, so for the present it may rest. We may say by way of explanation, however, that the failures that arose were consequent on our leaving no wax on the wood at the bottoms of some of the cells; we had in some instances put too much pressure on the machine, and left only a tracery of cell-wall upon the wood; and wherever this occurred, the bees built their cells parallel to the wood, or formed a curtain of cell bases upon it, and built cells on one side of it (the curtain) only, at the same time they cleared off all the wax tracery, and used it to carry out their own devices. This has established a valuable fact, viz. that bees will accept offered wax under certain conditions, and that fact will not be lost sight of.

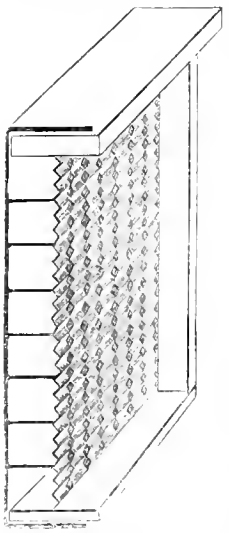
The rapid sale of the inelastic wired foundation imported from America, notwithstanding its high price as a patent article proves the intense desire on the part of bee-keepers for a foundation that can be relied on, and while we are satisfied that our wooden foundation will fill the requirement provided bees can winter well in it, which time will prove, we make no apology for publishing a device invented by Mr. Cheshire, which will be helpful in enabling bee-keepers to use full sheets of ordinary foundation with safety. Mr. Cheshire has shown in a communication to this *Journal*, p. 226, vol. vii., that the shape of the cell-base need not be angular as the bees make it, his argument tending to the conclusion that the saving of material is the chief cause thereof, seeing that the angles so soon become filled up, and he has taken objection confessedly, on very limited experience, to the *wired* foundation, on the grounds that it is difficult to fix, and that the wires are injurious to the brood, and should be removed,* matters of which we have had no experience.

The invention for securing the ordinary foundation is highly ingenious, and will probably find many admirers; and undoubtedly, when carefully applied, will be highly successful. Instead of fixing fine wires in the foundation on the American plan, he supports the sheets on a series of wire-points, which hold it firmly in its correct position, and do away for the necessity for the wax pot or smelter usually used; since once in its place it cannot fall, nor can it be shaken out of the frame by even violent effort. The means employed is a kind of wire-rake, the long teeth of which, *A* and *B*, go above and beneath the top and bottom bars of the frames, and the shorter ones, *c*, *d*, *e*, *f*, *g*, *h*, hold the comb-foundation on their points in the exact centre of the frame. Each frame requires six of the rakes, all being on one side of it; and as each rake has six points piercing the foundation, it is held in thirty-six places without any other aid, until the bees build it up to the top bar and draw out the cell-walls on the sheet, when the rakes being removed the bees close up the pin-holes and make the combs perfect. The method of applying them is extremely simple. A piece of board, the size of the frame, and half its thickness, is laid upon the table, the frame is laid over it, and the sheet of founda-



* The importation through Messrs. Thurber, of which notice was published in the *Journal* some time since, was all distributed by us before we were aware that a further supply could not be had, so we had no opportunity of testing its merits. Mr. Cheshire, however, in the *Journal of Horticulture*, of May 6 and further, dispraises it sadly, though we have never heard a complaint of it from any other source.—Ed.

tion, cut to fit the frame, is laid on the board; being then in the exact position it is to occupy in the frame, the rakes are then applied, *A* and *B* slipped over the outside at any angle until they grip the top and bottom bars, and the short teeth, being inside the frame, are pressed down into the wax. The woodcut gives a section of a frame showing one of the rakes in position holding the wax-sheet, which cannot fall, bend, or stretch; and the wires being but little impediment to the bees, the work of building proceeds rapidly. Care has to be taken in fixing the rakes that no extra holes be made through the foundation, or, Mr. Cheshire states, the bees on opposite sides of the sheet will 'talk' to each other through the apertures; and, instead of fixing the foundation, will amuse themselves by clearing the wax away from the points of the rakes, and the foundation will collapse; but that is a casualty which, being understood, can be provided against, and does not affect the principles or merits of the invention. The only drawback we see is the possible expense, there being six rakes to each frame. A Woodbury hive will require sixty of them, and as they cost 1*d.* each the prospective outlay is rather alarming. It is true that they will last for many years, but usually they will all be wanted at swarming-time; and to have a number of hives in readiness will entail rather a large outlay. The foundation which Mr. Cheshire experimented with was that supplied by Mr. Raitt, thinner foundation he had not tried when exhibiting his invention.



HIVE ASPECT; A NEW IDEA.

Sunday, the 28th ult., was a lovely day with us, and strolling amongst our bees, we noticed (2 p.m.) a commotion at a nucleus hive, in which there were about 200 bees in charge of a young Holy Land queen, and suspecting something was amiss, it was the object of particular attention, and presently we saw her young holiness return from a flight, but without the usual appearance of success, and in a few minutes all was quiet. This hive was in a sheltered corner, S.S.W. by S., into which the sun does not shine till after 1 o'clock. Later on, about 4, a similar state of affairs occurred at a hive facing due west, but here we did not see the queen. At the first-named there were no drones, and seemingly none flying from other hives; in the second there were plenty of drones out, but as far as we could ascertain, those belonging to hives with a southern and eastern aspect were all at home. If we waited for further experience in this matter, our readers would not have our thoughts until August, so we hazard the suggestion that a system of shading in the one case, and reflecting the sun's rays into hive entrances in the other, may be helpful in controlling fertilisation. In large apiaries this might be troublesome, but in small ones, where often the greatest help is needed, it might be worthy of consideration.

NEW QUILT.

By favour of a Kidderminster subscriber, we have received a bale of quilted material that will be admirable for covering hives. One layer of it is equal to about four of house-flannel. There is only about enough to make 400 quilts for hives, and probably no more will be forthcoming, as it is a job lot that did not suit the purpose for which it was *originally* intended. When bound in squares and laid on hair-cloth, it will form a splendid quilt, and will cost 10*d.* per yard cut to Woodbury width (16 inches), or 1*s.* for Standard (18 inches).

LIGURIANIZING AND ARTIFICIAL SWARMING.

We have been favoured by a cutting from the *Aberdeen Free Press* of June 14th, and to those about to follow the advice therein given, we say, 'Don't!'

'Those who are new hands among bees, and wish an easy and profitable method of making an artificial swarm, should follow the plan I am now about to describe:—Procure an Italian queen from some of the dealers in apiarian supplies. Take two bars of comb from a hive, shake off the bees, placing the combs in the centre of another bar-frame hive, prepared beforehand for the reception of the new swarm. Cage the Italian queen between these two combs to prevent the bees killing her. Remove any strong colony a few yards from its present stance, placing the new hive containing the caged queen in its place. The bees, returning from the fields, enter the hive, rushing hither and thither in wild despair for some minutes, until they ultimately come to the conclusion that "what can't be cured must be endured." They will soon be found depositing their loads near the caged queen, and returning again to work with renewed energies. The queen may be set at liberty in about twelve hours.'

We cannot see a single reason why the Ligurian queen should be put in the position of danger, amongst the savage old bees forming the artificial swarm, seeing that their own queen could equally well be put with them, and good order preserved, while the golden beauty could as easily, and far more safely, be intro-

duced to the young bees in the stock hive. Nor should we feel safe in releasing a valued queen *under any conditions*, after twelve hours' probation only amongst old bees, but should be more inclined to believe in ninety-six at the least. It is well known that *occasionally* alien queens are accepted almost without precaution, but in the majority of instances it is the reverse; and after our late experience in the introduction of the lady from the Holy Land (p. 46), we advise those who are introducing valuable queens to be cautious. More than half the failures that occur in introducing queens arise from the presence of old bees, they hug the queens to death, but whether from love or hate we cannot say.—Ed.

THE COMING SHOW AT WINDSOR.

There will be eleven exhibitions of bees and their products, hives, bee-furniture, and manipulation during the present month, all of which have been heretofore notified in these pages, except that of the newly-formed Berks and Bucks Bee-keepers' Association, which will take place in the Home Park on the 13th inst. in connexion with the Prince Consort's Windsor Association.

Numerous prizes are offered, open to all England, with others limited to local exhibitors, and His Royal Highness the Duke of Connaught will distribute the awards at three o'clock in the afternoon.

The Prince Consort's Association was initiated by 'Albert the Good' 'for improving the condition of labourers and others,' and is under the special patronage of Her Majesty the Queen, who usually honours its exhibition with her august presence; and it is hoped that similar favour will be extended to the exhibition of the Association of Bee-keepers that has been established for a similar purpose. Like their bees, who will cluster wherever their queen perchance may be, bee-keepers will swarm with their products to the Royal Borough on the 13th, and will be happy in the knowledge that their queen has given countenance to them even vicariously while the actual 'Presence' would render them wild with delight. British bee-keepers are essentially loyal, and their Associations are happily kindred in purpose to that which the great Father of Kings deemed not unworthy his direct personal influence, and which now bears his honoured name. Bee-keepers are of all classes, and their Associations have but one object, viz. 'the encouragement, improvement, and advancement of bee-culture in Great Britain, particularly *as a means of bettering the condition of cottagers and the labouring classes*,' and they have reason to feel honoured by their connexion with the Prince Consort's Windsor Association. Members of such Associations may say with perfect good feeling,—

'From the loom, from the mine, from the forge, from the mart,
From the cells of stern science, the halls of fair art,
From the homes of calm learning we come;
Who grudges his brother a brotherly part
In our work. Let him hence and be dumb.'

BRITISH BEE-KEEPERS' ASSOCIATION.

Committee meeting held at 105 Jermyn Street on Wednesday, June 9th. Present, Mr. T. W. Cowan (in the chair), and Messrs. J. P. Jackson, J. M. Hooker, C. N. Abbott, J. Hunter, F. Cheshire, Rev. E. Bartrum, W. O'B. Glennie (Treasurer), and the Rev. H. R. Peel (Hon. Sec.) The minutes of the previous Committee Meeting were read and confirmed. The Secretary reported that all the gentlemen selected to act as judges at the South Kensington Show had accepted office with the exception of Mr. Herbert Jenner-Fust.

The Treasurer reported a balance in hand of 62*l.* 3*s.* 4*d.* The Rev. E. Bartrum moved, and the Honorary Secretary seconded, 'That Mr. Cheshire be requested to draw up an explanatory account of the diagrams, such account when printed not to exceed twenty-six pages of 300 words each.' Mr. J. P. Jackson having offered a Cyprian queen to the Association in lieu of the one placed in the care of Mr. Cheshire in October last, it was moved by the Secretary, and seconded by Mr. Hooker, 'That the best thanks of the Meeting be given to Mr. Jackson for his kind and valuable present.' The Committee then proceeded to make the several arrangements for the Annual Show to be held on July 27th, 28th, 29th, 30th, 31st, and August 2nd, the entries for which close on Saturday, July 17th, in accordance with the following notice, viz., 'The third quarterly meeting during the present year of Representatives of County Associations to be held at the Royal Horticultural Gardens, South Kensington on Tuesday, July 27th, the first day of the Show at four o'clock in the afternoon, special subject for consideration, 'Suggested rules and regulations for County Associations in affiliation with the Central Society.' A Conversazione will be held at the close of the Quarterly Meeting. Subject for discussion, 'The relation of Bees to Flowering Plants,' to be introduced by Frank R. Cheshire, Esq., of Avenue House, Acton. The meetings will be held in the large Conservatory. A General Meeting of the Members of the Association will be held on Wednesday, July 28th, at six p.m., and the prizes gained by the successful exhibitors will be distributed at six p.m. on Thursday, July 29th. The Show will open on July 27th at twelve o'clock, and on each succeeding day at ten o'clock a.m.

BRITISH BEE-KEEPERS' ASSOCIATION.

Donors to Prize Fund.

	£	*s.*	*d.*
Rev. G. Raynor	1	1	0
T. W. Cowan, Esq.	1	1	0
R. R. Godfrey, Esq.	1	1	0
H. G. Morris, Esq.	1	1	0
F. R. Jackson, Esq.	1	1	0
Rev. H. R. Peel	2	2	0
Rev. J. Lawson Sisson	0	10	0
Mrs. H. R. Peel	0	10	6
Edward Wilson, Esq.	0	10	0
Mr. R. J. Tomlin	0	5	0
Mr. J. Walton	0	2	6
H. Bostock, Esq.	2	2	0
R. Symington, Esq.	2	2	0
F. C. C. Barnett, Esq.	0	10	0
C. H. Hodgson, Esq.	0	5	0
Capt. P. E. Martin	1	1	0
S. Walker, Esq. (jun.)	0	16	0
T. F. Ward, Esq.	0	10	6
W. E. Warren, Esq.	0	10	6
Mr. W. Sells	0	5	0
Mr. Thos. Sells	0	2	6

LETTER FROM THE REV. H. R. PEEL.

DEAR SIR,—Will you allow me to remind the members of the British Bee-keepers' Association that they must bring their tickets of membership for 1880 with them, if they wish to obtain free admission into the gardens of the Royal Horticultural Society during our approaching show? Every member who has paid his subscription, due on May 1st, 1880, has received a ticket of membership with his receipt. Those who are in arrear with their subscriptions are, in accordance with Rule vi, not entitled to the privileges of the Association.—I remain, Sir, yours truly, HERBERT R. PEEL, *Honorary Secretary.*

ESSEX AGRICULTURAL SOCIETY.

We have much pleasure in extracting from the *Chelmsford Chronicle* of Friday, June 11, the following account of the appearance of the Bee Tent at the Annual Meeting of the Essex Agricultural Society, held at Mistley Park, Essex, the seat of the Rev. C. F. Norman, and also of the inauguration, under most favourable circumstances, of the Essex Bee-keepers' Association:—

'A great novelty in our county exposition was the Bee Tent (kindly sent by the British Bee-keepers' Association) and the operations performed and explained by an expert who accompanied it. We cannot imagine anything better calculated to create an interest in bee-culture than displays of this nature. Looking to the system in vogue with our agricultural population—inherited from their forefathers, and so pertinaciously adhered to, of destroying their bees, to a great extent, annually, in order to obtain a small quantity of a filthy mixture of grubs, pollen, and honey—an exhibition of this kind, in which the modern and scientific appliances in use by the skilled disciples of apiculture of the greatest honey and wax-exporting nations of Europe and America, are presented to the wondering eyes of our rural population, cannot fail to exert a beneficial influence, and to be of the greatest service, in an economical point of view. When our tenant farmers, and their landlords, begin to realise the great importance of the honey-bee in the fertilisation of their crops, as well as in its honey-collecting propensities, they will awake to the fact that the half-million, or more, which we pay annually to other nations, may as well be retained in our own country. For reasons like these we give our hearty good wishes to those gentlemen who, at a considerable outlay of time and money, are engaged in forming an Essex Bee-keepers' Association, and of thus removing from Essex, at least, the stigma and reproach of doing nothing to advance this long-neglected industry. Mr. J. S. Baldwin, an expert of the Association, explained the improved method of bee-management. At four o'clock a meeting was held in the Tent for the purpose of forming an Essex Bee-keepers' Association. Mr. G. D. Chapman, Hon. Sec. *pro tem.*, made a few remarks upon the importance of possessing such an association in the county, and the Rev. G. Raynor, Rector of Hazeleigh, then pointed out the advantages to be derived from forming the Association. He said that similar societies existed in twelve English counties, and it was discreditable for Essex to be so much behind in this matter. These little things were not sufficiently studied in England as a rule, and it was necessary that attention should be called to them in this time of depression as being calculated to assist agriculturists. An immense quantity of honey was annually produced in Germany and America, owing to the improved methods of bee-keeping adopted by them; whereas in England farmers and labourers were allowed to go on keeping bees in the manner which their grandfathers and great-grandfathers kept them. It was hoped, by forming this Association, to bring under public notice in Essex any improvements or advances made in apiculture; and the promoters also aimed at diffusing a knowledge of the elementary principles of the art by sending a Bee Tent, similar to the one in which the meeting was being held, to horticultural and cottage-garden shows throughout the country, and by having the proper methods of bee-keeping explained. During the winter months it was proposed to give lectures, and to invite public discussions afterwards. The *British Bee Journal* would also be circulated among the members of the Association. It was hoped that ladies and gentlemen would become members, and Lord Rosslyn was to be asked to become President. A list of vice-presidents was to be proposed, and it was trusted that a flourishing Association would be formed at a meeting to be held subsequently. The minimum subscription would be 2*s.* 6*d.* per annum. Mr. Baldwin also spoke in favour of the formation of the Association, and a number of visitors afterwards gave in their names for membership.

LINCOLNSHIRE BEE-KEEPERS' ASSOCIATION.

We learn that the Lincolnshire Bee-keepers' Association has made arrangements to be represented at the Grantham Horticultural Society's Show, to be held on the 27th July; also at the Caythorpe Horticultural Society's Show to be held on the 29th July; and at other flower shows during August. The Association's great show is to be held at Boston on the 9th of September. Boston is a town easy of access, and we hope the Association will be honoured with a large gathering.

FOREIGN HONEY.

FALSE PRETENCES.—ARTFUL FRAUD.

At the Ormskirk Police Court, May 28, a young woman, Leah Gabriel, was charged with selling foreign honey, falsely pretending that it was pure English. There were over fifty cases against her. She passed herself off as the daughter of Mr. Barnes, head gamekeeper to the Earl of Lathom, stating that he had thirty hives of bees, and that the honey was their first make, representing also that various neighbouring residents had directed her where to call, and thus she artfully got introductions to houses where otherwise she would have had no hearing. In some cases she said it had been 'ordered,' and obtained 2*s.* and 2*s.* 6*d.* per jar. The honey (?) was described as foreign, and very poor stuff, and prisoner said she bought it in Liverpool at 6*d.* per jar.

Mr. Barnes denied all knowledge of prisoner, did not keep bees, and had become notorious against his will as a honey-merchant, receiving letters and newspapers so addressed, and found that to further her ends the prisoner had been promising private rook and rabbit shooting to her customers.

The poor girl pleaded hard to have the case settled at once, evidently under the impression that she had merely done a smart business, saying, 'Please, sir, I have never stolen anything, and I have already been here eight days. Do whatever you will with me, but do not keep me here any longer, or I shall go mad. I have neither father nor mother, and nobody in the world to help me.' She was committed for trial at the Kirkdale Sessions, begging hard that she might not be prosecuted.

DEATH OF MR. JOHN HUNTER,

OF EALING.

We are exceedingly grieved to be called upon to chronicle the decease of our friend and associate John Hunter, Esq., of Ealing. The presence of Mr. Hunter has been so conspicuous in our midst for so many years, that we have no slight difficulty in realising this sad event: even in this number of the *Journal* it will be seen that he attended two meetings during the past month, and a contribution from his pen will be found in our Correspondence columns. The bee-keeping community generally, and the British Bee-keepers' Association specially, will ever remain deeply indebted to Mr. Hunter for having, in the year 1874, undertaken the onerous duties of the Honorary Secretaryship of that institution, and in that capacity he contributed greatly, by his strenuous exertions, by his indomitable energy, and by his business tact, to render the first show held at the Crystal Palace a success; also, after the resignation of the Secretaryship, for his devoted steadfastness in the performance of his duty as a member of the working committee of the Association: and for his contributions to apiarian literature.

Mr. Hunter was born in London December 10, 1831. He was the second son of Mr. James Hunter, of Bloomsbury, who was the founder, and for thirty-eight years the secretary, of the Royal Standard, one of the largest and most successful benefit societies in the kingdom. Mr. John Hunter was one of the originators of the British Bee-keepers' Association, and his interest in its welfare he retained to the last. He was the author of the *Manual of Bee-keeping*, which has now attained its third edition. He was the writer of the article 'Apiary' in the last edition of the *Encyclopædia Britannica;* also, in 1875, of a pamphlet entitled *The Cottage Frame Hive*, specially written for the use of cottagers. He was for several years on the staff of the *Journal of Horticulture*, and also on that of the *Gardeners' Chronicle*, and was a constant correspondent to both British and American apicultural magazines. Many contributions from his pen will be found in the earlier volumes of the *Journal*. The paper which he read at the Conversazione on April 14, on 'The Future of British Bee-keeping,' will be fresh in the recollection of our readers. Mr. Hunter was selected by the Committee of the British Bee-keepers' Association, together with Mr. Cheshire, to compile the *Handbook for Cottagers*.

At the South Kensington Show in 1878 Mr. Hunter was awarded a silver medal for a very fine collection of microscopical objects illustrating the natural history of the honey bee.

He was a member of the Quekett Microscopical Club of London, and also of that in Ealing, and on October, 25, 1878, he read a most interesting paper on 'The Queen-bee, with especial reference to the Fertilization of her eggs.' This paper was published in the Journal of the Quekett Club, and reproduced in our pages. He was also for many years a member of the Entomological Society.

Mr. Hunter's exertions and spirits were always in excess of his strength. He had been in very delicate health for many years, and succumbed after an attack of pleurisy, culminating in congestion of the lungs, of less than a fortnight's duration, at his residence at Ealing, on Sunday, the 27th June. His death will be a very great loss to the cause of Bee-culture and Science in general.

Correspondence.

*** *These columns are open to Subscribers, so that their queries, replies, correspondence, and experiences, may be* fully *and* faithfully *recorded; and for the discussion of all theories and systems in Bee-culture, and of the relative merits of all hives and appurtenances, that the truth regarding them may be ascertained. The Editor, therefore, must not be expected to coincide with all the views expressed by the various writers. All Correspondence is addressed to the Editor.*

WATER FOR BEES.

With the exception of a deep, moss-lined old spring-well in the garden, the bees of my apiary have no water near at hand.

More than twenty years ago, noticing the number of bees which flitted over the old well and sipped its water, resting on the moss, I had freestone troughs specially cut, and set in the centre of each hive-grouped crescent. These were filled with moss, which was saturated with water to overflowing every morning. The plan wrought well, saving, during dry weather, the blackbirds and thrushes visited the water-troughs as well, and tossed about the moss in quest of the snails and worms, which the dampness naturally attracted.

Reading, in Mr. Root's *Gleanings in Bee-culture*, the interesting story he told of discovering the quantity of water his bees drank, and the provision he made to supply it, and thinking the wooden stage he recommended always liable to crack and rend in hot weather, I thought it could be improved upon; so to utilise a pair of rather handsome vases, I had a circular marble slab cut, twelve and a half inches in diameter, to fit the vase-top. From the common centre eight shallow gutters, five inches long by half an inch wide, were hollowed, falling into a similar circular gutter all round, whose outer bead-edge was kept a shade lower than the plain central surface, so that the waste water would overflow over the bead down the inclined chamfered outer rim, and not disturb the bees drinking on the plain dry surface between the grooves.

For to supply the water, I had a barrel-shaped bottle blown holding eighteen gills, fully half an imperial gallon, bottomless, with spaces ground for the free emission of water to save tilting it on glass, as advised by Mr. Root. A knob on top to turn by, and a nicely engraved fern-pattern on the glass gives the whole a cool, refreshing appearance to the eye.

As marble cutting is rather an expensive luxury, for the benefit of the fraternity I went to the expense of having a mould made by a pottery firm, and after considerable care and trouble in the firing to preserve their levelness, at last produced the idea in white, glazed, dry, hard porcelain or earthenware material, which could be marbled at a trifling extra cost if considered an improvement. The lower side, having a circular hollow, offers facility for receiving a wooden bung, which could be set in a four-inch glazed fire-clay-pipe pedestal, such as I introduced years ago as a suitable stand for bee-hives. They cost 9*d*. each, retail. Ornamental iron pillars, or any other form in keeping with the taste of the bee-keeper or surroundings of the apiary,

would do equally well, only the watering-stage must be set dead level, otherwise water would escape from the bottle. When filled, it can be turned on a bit of thin wood, veneer, or glass, set on the stage, and material used to turn by, carefully drawn out.

I have pleasure in sending our editor a photograph of the watering-stage, pedestal, and bottle, as set upon a bit of lawn before my observatory stock here; also a sample bottle and stage for his acceptance and opinion.—A Renfrewshire Bee-Keeper.

BEE-FLOWERS.

Among the various lists of bee-flowers appearing from time to time in apiarian literature, I do not remember seeing mentioned a common, old-fashioned, herbaceous-bordered *Geranium pratense*—a very free bloomer, and constantly visited by the Italian, Carniolan, and Black bee alike.

When my first Italians were liberated, now many years since, they at once went to work on the Scarlet Monarch—a flower I had never seen a black bee alight upon; and the orange banding of the new-comers looked beautiful on scarlet back-ground as a foil.—A Renfrewshire Bee-Keeper.

WIRED FOUNDATION.

I consider the wired foundation a mistake. I tried it in two hives against the English, into which I put swarms. By the English, I mean the foundation you supplied me with last year. Some that I got before elsewhere was very inferior. Having been troubled with the wired foundation curling up, I stretched across the frame about two inches from the bottom two pieces of silvered wire such as is used for tying up bouquets. I treated both the foundations the same, that is, I filled the frames to within a $\frac{1}{4}$ of an inch of the bottom, and securely held the foundation with the silvered wires, which I removed as soon as the bees began building out the cells. The wired foundation curled below my wire, the bees gnawed it away, leaving the wires projecting at an uncomfortable angle; and then if I did not cut them away at once they proceeded to build the comb down straight with the curled-up wires, and therefore of course spoiling many cells. The English in every case was worked out beautifully straight from top to bottom. The bees are longer in working out the American. I have not yet found that the larvæ are killed by the wire, but I found in one hive a number of dwarf bees, some very small but equally as well marked as the other Ligurians. It is undoubtedly the case, as the Editor of the *American Bee-keepers' Magazine* at last admits, that the bees alter the shape of the flat bottom. Of course they cannot alter the shape of those cells through which the wire passes, and if the bees hatch out they must naturally be smaller. Either the queen shows a remarkable preference for laying her eggs in the combs made from the wired foundations, or the bees object to storing the honey in them, and so leave more room for the queen to lay her eggs. Whatever the reason, these combs are always filled with a great deal more brood than any others in the apiary.—G. C. E., *June* 22, 1880.

[The foregoing was kindly forwarded to us in reply to a request for a report on the merits of the wired foundation. We mentioned the objections which Mr. Cheshire had urged against it in the *Journal of Horticulture*, and our anxiety for confirmation or otherwise of his statement that the wire killed the brood, and hence the necessity for tearing it (the wire) out, after the combs are built. Mr. Cheshire confessed to a limited experience with the foundation in question; but our distinguished correspondent, while objecting to the wire because of its curling propensity, gives high praise to the foundation in regard to its use for breeding purposes, since the queens seem to prefer it to all other in which to lay their eggs. Although we are courteously permitted to publish the above, it was conditional that initials only should be given; but we venture to assert that the writer is strictly impartial, and his evidence indisputable.—Ed. *B. B. J.*]

GOLD FROM WAX.

I have just heard of a large quantity of gold having really been extracted from wax! A friend who deals in wax in very large quantities has a customer who is a silk mill proprietor, and it appears part of the machinery is formed of gold wires which require coating with wax, and as it gets dirty is removed and renewed. Several tons of this dirty wax had accumulated, and was re-bought by my friend at 5*d.* per lb. It afterwards struck him that as it had been in contact with gold some of it would probably remain in the wax; and the result proved he was correct, for out of 9 cwt. he obtained enough metal to pay for several tons he had bought. Perhaps your late correspondent's gold came from a similar source.—John Hunter, *Argyll Road, Ealing, May* 31.

BEE-KEEPING IN IRELAND.

QUEEN-CELLS IN LIEU OF QUEENS.

I have good news for you. A great many persons about here are beginning to take a great interest in bees. Some persons came twenty miles to see my bees and hives, and were astonished at what they saw and heard. Although one of them attended a bee show in England, he said it was nothing compared to what he saw and heard to-day. I asked him if he saw the Editor of the *Bee Journal* he said not. He will take the *Journal*, and I think I shall get several others to take it soon. I forgot to first thank you for your kind letter; I shall do all that you have recommended. I have got some friends to join with me in getting a pure Cyprian queen, as soon as possible, as I should like to take some with me to the show. Would you mind sending me a queen-cell (of the Holy land bees) with a few bees I should like to see them. I hope to be soon able to subscribe to the Irish Bee-keepers'

Association (which I hope will be established) after the show.

[We will certainly comply with the request for a queen-cell as well as queen, at the earliest opportunity. Near ten years ago, when queens were very expensive, we suggested the feasibility of sending brood, and queen-cells too, to those who wished to improve their bees at small cost, and advertised our willingness to do so in the *English Mechanic and World of Science*, but queens became cheaper when the *Journal* came into existence, and the idea was lost sight of. Now, however, that Cyprians and Holy-landers are so scarce, their influence in an apiary might be obtained by skilful bee-keepers in the above inexpensive way.—Ed.]

THE *JOURNAL* NEEDED.

I have a weak stock of common bees. I think they must have lost their queen, and are gradually decreasing. Would this be a good opportunity to introduce a Ligurian queen? As there are no Ligurians in this district, I have no one I can consult about them. This has been a serious season for bee-keepers here. I am the only survivor in this village, and have lost myself eighteen from twenty-five stocks.—Ray Tyrrell.

[We have many times pointed out the folly of wasting Ligurian queens on old dwindling queenless stocks. Old bees cannot or will not attend to brood, and the strength and value of the Ligurian would therefore be lost. Attention to *Journal's* advice would probably have saved ten times its cost.—Ed.]

APPRECIATION OF THE *JOURNAL*.

I was struck with the force of your remarks in reference to the practical form in which your correspondent 'H. D.,' in June number, had evinced his appreciation of your efforts, and his desire to spread a knowledge of bee-keeping; and for your information I may state that for years past when I have been asked by beginners, 'Which is the best book to buy?' my invariable reply has been, 'Take the *Bee Journal!*' and I am pleased to know that not a few have acted upon the advice. As an instance of how the turning-point in a bee-keeper's practice may be brought about in this way, I may mention one remarkable case. Some two or three years since a gentleman from Sweden, who had then about eighty stocks, called upon me asking to be allowed to see my bees and *hives*. He had then just come from visiting a neighbouring apiary, where he had mentioned that he found it very difficulty to preserve his bees from damp during the long Swedish winters, as he used only wooden hives. The apiary referred to was strong in straw, and its owner was so strong *on* 'straw,' that my friend concluded at once that he had discovered the grand secret he was in search of, and he resolved at once to make firewood of all his hives the moment he got home. Having mentioned this intention to the gentleman who had sent him to the straw apiary, the latter suggested to him that before putting it into execution he had better call upon me. I showed him my wooden hives, and how I wintered them, and the result was his immediate reconversion; the wooden hives were saved from the flames, and he at once deposited with me the money to pay for back volumes of the *Journal*, together with subscription for the then current year, all to be sent after him to Sweden. I may also add that in a letter I received from him some time after he had got home he informed me that he had sent to you for one of your hives, which he was daily expecting. You will, no doubt, remember all the circumstances though I have not before related the circumstances under which this gentleman became a subscriber to the *Journal*. If, therefore, the *Journal* and its teachings are 'comparatively unknown,' it is not the fault of—D. Breen, *Manchester*.

BEE HOUSES.

After an equally long experience of bee-houses with Mr. Shuffleboth am, I have arrived at the very opposite conclusion from that which he lays down in your last. For the sake of economy, I persisted for a time in houses holding four or more hives, but found that the disadvantages were such as he states, and even worse. The plan which I now follow is to have a house for each hive, and I consider the result most gratifying in every way. I can manipulate the frames with a *minimum* of disturbance to the bees; do not interfere with those which are out on flight, and am not in the least exposed to attack from the watchers at the door of the hive. My bees are protected better from rain and storm, and I can keep them warmer in winter, and ventilated better in summer. My houses, besides, are quite ornamental, and the whole affair, house, hive, frames, and one tier of supers, I can produce for 20s., a small sum to expend on a swarm that, in a good season, may produce surplus honey to five or six times its value.—Alrofi.

[These 'houses' seem very much like the single 'hives' we so constantly recommend.—Ed.]

FREAKS OF BEES.

Relatively to my letter of the 23rd April, in which I described the strange action of one of my stocks of bees, I continued to observe them carefully, and about the 10th May I found that the queen (in the swarm) had commenced breeding; but, unfortunately, the worker-cells were being transformed into drone-cells, consequently the colony is useless. The old stock-hive is queenless, and rapidly lessening in numbers. The experience of the present month is that the bulk of my bees are in an unsatisfactory condition, but I have some promising hives. I secured a good natural swarm about Whitsuntide, which is very rapidly building and storing. But every report that I have heard of the bees this spring is far surpassed by our Treasurer's (Mr. G. Allen of Orpington). I visited his apiary on Whit Monday, and was delighted to be able to confirm what he had already told me. I found that he had two stocks of blacks working in sectional supers—one had filled up completely with comb, and the other had stored to the extent of 14 lbs. in a set of sections capable of weighing, when full, 42 lbs. The work at the time of my visit was not progressing very rapidly as swarms had recently issued, one of which he stated weighed

7½ lbs., the other 6 lbs. I think you will be pleased to hear this, and you have my full permission to use the information as you please. To refer to my own bees, I suppose the best plan would be for me to unite the weak stocks, giving them the best queen that I find among them.—G. Garratt.

AMMONIA FOR STINGS.

Your correspondent, Mr. S. Nicholl, cautions those who have not used this remedy, that if they apply it to eye, nose, or lips, they may find those members skinless. I can only say that before I became, by constant practice, almost insensible to bee-poison, I used it constantly myself without any such result; and that, within the last few days, I applied it to the extreme tip of the nose of a fair-haired, thin-skinned boy of 5½ years of age, the result being the immediate cessation of pain. No swelling took place, and there was no appearance next day either of ammonia having been applied, or of a sting having been received in so tender a place. Nevertheless, it is well to be cautious in the application of so potent a remedy, as, doubtless, ammonia, like bees, does nothing invariably.—H. Jenner-Fust, Jun., *Hill Cottage, Gloucestershire, June* 20, 1880.

AGE OF BEES.—DEATH OF QUEENS.

The Ligurian queen I got from you in August last has till to-day realised all hopes. Her brood-nest is full, from the four-day grub upwards; but herself is amongst the things that were. I have just found her on the ground in front of the hive, dead, with wings distended and torn. There is not an egg in the hive, but a queen-cell with grub and jelly gives promise of a successor. Drone-cells, too, are well advanced. Though released on the 22nd of August, two days after her predecessor had been removed, the native bees still hold on as about two to five, evidence that at least a bee's winter and spring life exceeds *nine months*. Was the queen murdered by her family, or has she died of old age?—Jas. G. Cuthbert.

[It is not possible to account for the death of the queen. She was one of last year's breeding, so could not have died of old age; and as she had fulfilled all expectations up to a short time before she was found dead, it is reasonable to suppose that she was a victim to encasement from some cause. Loss of queen life has been very common this year, our own stocks having suffered enormously from queen-encasement, apparently without reason. During such a winter the young bees would have to perform little labour, but by the time the Ligurian brood has all hatched out there will be few black bees left.—Ed.]

STATE OF HIVES IN DORSETSHIRE.

There has been a great mortality of bees in Dorset, especially amongst the straw skeps, this last winter, but those who have adopted the frame-hive, and looked to them, have generally managed to save them. The bee-keepers hereabouts have learned the advantage of nucleus hives, as there has been a great loss of queens this spring. I have lost two hives through their being queenless, and all my neighbours round have lost some from the same cause. Our bees are now doing well, but the dull, cold weather of the latter part of the last month and beginning of this has kept the bees at home, and I think made them think of queen-raising. A friend of mine had four hives working in supers, and every one of them have swarmed. I have had two of my best hives that were working in supers, do the same. We have not had our bees in such good condition for several years; and if the season only continues favourable, we hope to take a good harvest of honey. Our Annual Show takes place this year at Weymouth in August next, and I shall be glad to give all requisite information to inquirers.—W. H. Dunman, Jun., *Hon. Secretary Dorset Bee-keepers' Association.*

THE BEE-KEEPER.

No doubt you have heard some particulars of the collapse of the '*Bee-keeper*' or '*Bee-keeping.*' I enclose post-card for your inspection:—

Bee-keeping Office, 1 Catherine St., Strand, W.C.
Feb. 17, 1880.

Dear Sir,—As I had to wait at the Old Bailey all last week, before our case came on, I have not been able to bring out the February number punctually, but will send it as soon as possible.

You will be glad to hear that we were victorious, the jury having stopped the case before we were called for our defence. Yours faithfully,

The Rev. R. J. Rogers. Geo. Rose.

Since its receipt, neither I nor other friends here, who subscribed, have received a copy or any communication respecting the paper. The prize-money for article printed was never paid me, nor even 1s. for telegram sent at request of Mr. Rose. I suppose it was the same with the other 'prize-winners.'—R. J. R., *Tunbridge Wells, June* 17, 1880.

[We give this matter publicity, as it may prevent further inquiry.—Ed.]

RESPONSIBILITY FOR QUEENS.

I had a Ligurian queen from you last autumn, and when it arrived I was so much disappointed that I thought of returning it, and letting it take its chance of reaching you alive, that you might judge if I had reason for doing so, but I decided on giving it a trial, and thereby, perhaps, I have forfeited any claim I might have urged. It was little larger than a worker, its abdomen all bloodshot, scarcely able to crawl, and evacuating horribly. I gave it a day to recover in a warm place, then caged it in my best hive, after removing the queen. On examining the hive a day after opening the cage I saw it alive, but never again. The hive wintered better than any of my three hives, but never a yellow-striped bee appeared, so that, although all strong, it is all common bees. I may say I carefully cut out my queen-cells. In such a case, are you in the habit of making good the loss in whole or part? Had the queen looked well on arrival, I should not have asked this, as I know how unreasonable complaints of a similar nature are sometimes

made in my own business.—J. W. L., *Stirling*, *15th June*.

[From the description of the queen on its receipt it is evident that our correspondent mistook a distended worker for the queen. We never before heard of a bee being 'bloodshot,' or of a queen 'evacuating horribly,' or at all, visibly. It is impossible that we can be responsible for queens after they have been delivered alive. We never hear any dolorous accounts of queens that have been safely introduced; it is only after failures (and in this case nine months after introduction) that we are told of their awful sufferings after they have left our hands. It is somewhat singular that queens should travel safely from Italy, and except a few dysenteric stains in their boxes, both queens and bees should be well, yet that one day's journey from here should take all the life out of them. Notwithstanding her dreadful condition, she survived a day before being caged, was in durance while queen-cells were being raised and cut away, and was alive next day. We guarantee safe arrival of the queen: we set no store upon the bees accompanying her; and whether they be dysenteric, swollen, or bloodshot, is of little consequence, so that she be alive and uninjured. Fertile queens have usually a steady matronly gait; they must not be expected to stand on their hind legs and crow.—Ed.]

A SWARM OUT OF THE WATER.

The above is a strange heading; and it may interest your readers to know what it means. One of my straw hives swarmed on the second of the month, and having heard 'piping' at intervals during three dull or wet days, I was expecting a cast on the first appearance of sun. Accordingly, yesterday, the 14th, I was not disappointed. I cannot say that the day was bright, though the barometer was rising, and there was every appearance of decided fine weather in a few hours. However, at 3 p.m., after considerable excitement at the hive's mouth, sundry impetuous exits of bees to look at the weather, and sudden returns back again with reports, out they came, and settled almost at the extremity of a branch of a beech-tree, about twenty-five feet from the level of a pond below. What was to be done? I got my man to lash together two ladders, which, after considerable difficulty, we 'rose' clear of limbs in the way, and settled them carefully down on the limb about eighteen feet from the bees. A rope was then got up, but over a branch above, and fastened to that which we wanted to lower. And now, while one holds firmly the end of the rope, another begins to saw with all possible care; but suddenly, before he could lay hold to ease it down, the brittle wood went off with a crash, and down toppled sixteen foot branch, sending a mass of bees (oh, horror!) plump into the pond. Imagine the consternation. And what is to be done now? Well, I seized my rake, fished out lump after lump, took them up carefully, and put them into the straw hive by my side. My helpers fished out more, and soon I went off with my cargo, shifted the clean sheet to an airy place, and carefully threw the reeking mass upon it. Soon they began to crawl, for it brightened, though the sun did not shine. Now more bees were brought, and I sent for some new sheets of blotting-paper, which did good service. In a few minutes the little folk began to separate themselves thoroughly, and I looked carefully for the queen, finding her eventually more dead than alive. She could just move one leg; but I started off as quickly as I could, held her before the kitchen fire on a piece of blotting-paper, and in two minutes she was so lively that I had to wrap her up carefully, and left her disporting herself under a wine-glass on the sideboard. Sallying forth to the lawn more bees are brought, and I hear that there is a considerable 'cob' on the branch which now hangs alongside the ladder. At once I bring out my queen, and place her under guard, go up and shake the 'cob,' bring it down, pop her ladyship in, invert, &c., &c., and in about two minutes, the word having been passed, the whilome lame ducks turn their heads and troop into the hive, like (if it is not an uncomplimentary comparison) the onward undeviating march of an army of locusts. I afterwards found another queen dead: besides her, only about forty workers succumbed after their rescue from the water, in which I fancy hardly a hundred perished. In the evening I duly made the party comfortable near where they are to be permanently settled. The cast was about three pints, and had five or six drones in it. Our friends are alive and well to-day.—C. R. S., *St. Goran, Cornwall, June 15th.*

Echoes from the Hives.

Holl, Fochabers, N. B., May 24th.—'Fully one-half of the stocks of bees have died in this district in the last twelve months. One bee-keeper who had sixteen stocks last autumn has now only one. Another who had eight has now three. I had two robbed in September, but with liberal feeding the nest are all alive and doing well, except one whose queen died on the 1st of May. She would have been four years old in July. A young queen was cast out on the 19th. I saw a young queen leave the hive on the 16th at 3 p.m., but heard no drones about. On the 23rd saw drones on the wing first time. So I hope she has got mated, and all right.'

Coldham, Cambs., May 31st, 1880.—'Bees in this immediate locality do exceedingly well. There is scarcely any limit to the vast quantity of honey that may be obtained from the hundreds of acres of mustard, turnips, and beans, white clover and other flowers; and in the late summer we have buckwheat.'

June 1, France.—'Here we had a good flush of honey with the apple blossom, but I don't think much is coming in just now with these dry and rather cold winds and hot suns. But I never saw swarms so numerous. Out of seven hives I have already five swarms boxed, all good sized ones (though I think some are casts), and two at least have gone away, so the farmer tells me. I have been absent all the time myself. Of these five swarms one is entirely established, and already pretty heavy, and another nearly so. Generally, I have had no swarms here before the 1st June; on the other hand, I have a "new idea" on a very strong Combination hive; and though the bees seem to live inside it, they have as yet built nothing there. I have two of old Collin's skep-hives, very heavy; and yesterday I cut them in two, and put a six-inch ring into the middle for the bees to fill up. Herr Dembler tells me he has already extracted 150 lbs. of honey, and to-day he means to take nearly as much more; but he has done all he can to prevent swarming. In spite of this he says he has as many swarms as he can manage, and he seems in

the highest spirits about his bees. I sent him your piece of wood-foundation. His only doubt is not that the bees won't store in flat-bottomed cells, but he thinks the queen won't lay in them. Have you yet any experience on that head? I am off again on the 3rd till the 25th. For me bee-keeping is quite impossible. My bees keep themselves, but I get more honey than my neighbours, because I feed and care for them when they require it.'—G. F. Pearson.

[We have much pleasure in assuring Herr Dennler that breeding goes on just as well in flat, wooden-bottomed cells as in others, and the bees hatch out as nicely. We hope to exhibit a hive in 'full fig' at the forthcoming show at South Kensington.—Ed.]

Coldham, Cambs., June 2nd, 1880.—'The bees have done so far extraordinarily well, from one hive I have already over 50 lbs. collected in two supers. I am only waiting for your slinger to commence extracting. I did not lose a stock during the last winter, and all (nine) are wonderfully strong and vigorous. During the last month I have had a field of turnip seed (fifteen acres) in full bloom—this will account for the vast quantities of honey.'

Somerton, Somerset, June 4th, 1880.—'I notice you have my letter to the *Western Gazette* in this month's *B.B.J.* Since it was written things have turned out worse than mentioned therein. The two frame-hives spoken of are doing splendidly, and do your lessons of last year at our show great credit.—John Hind.'

Ruabon, June 7th, 1880.—'I commenced bee-keeping about eighteen months ago. I have now twelve hives. I wintered them all safely save one, the victim of a simple accident, not due to the weather. It was unfortunately one of my very best stocks. I will give some interesting details of the accident another time. I had a very fine swarm, May 26. I must attribute my success to safely wintering my bees to the timely advice given in *B. B. J.*—C. C. K.'

June 11th, 1880.—'Am at Dartmouth for a few days. It is cold down our way, and no supers filling now, but much swarming. Where is the hot June? There is only *one* hive of bees in Dartmouth! Yet it is a capital place for them.—Geo. Fox.'

Isleworth, June 14.—'I took off 93 (lb.) sections super honey last Friday and Saturday. From one hive I took 25 lbs., leaving 17 lbs. not quite finished; from two other hives I took 21 lbs. from each. If this will interest any of your readers in the *Journal*, you are at liberty to print it. The remainder of the sections (26) were taken from three hives, leaving most of the others not quite capped.'—W. E. Warren.

Brislington, June 15th, 1880.—'I have been rather unfortunate in my hives, having lost five early in the spring, not from want of food, as in each of the hives a considerable quantity of honey remained in the combs after the bees were extinct. On the 20th May, I had a very strong swarm of Ligurians, which were twice taken and came off the third time, and settled on a tree near a very weak hive of black bees. They left the tree, rising high into the air, and we thought they were lost, but they soon made a descent, alighting on the flight-board of the weak stock which they very soon exterminated, and are now in possession, working very strongly. There is a fair appearance of honey about here, my son took a beautiful super of 20 lbs. for a gentleman last Saturday.—D. M'Pherson.'

Ryde, June 17.—*Hiving under Difficulties.*—'In my travels I have heard a good deal of the losses of stocks. The testimony is universal that the last season was the worst known within memory of man. I had the pleasure of hiving a swarm one day that had settled on a large yew out of reach, and the old folks had been busily employed for an hour or more shaking the branches to get them "down," as they said, the only result being hundreds of dead and wounded bees on the ground, and sundry stings they had sustained. Asking for a dung-prong, I thrust it into the top of a skep, and sent the old man up his ladder with it, turning it up under the swarm; then with a well-crook over the branch we shook the swarm into the skep, and brought them down. I returned that way in a couple of hours after, and was overwhelmed with thanks from the grateful old folks: and the bees were all comfortably housed and steady at work. I hope your hives are prosperous.'—J. W. Pewtress.

Leicester, June 17.—'I forgot to mention that the carriage of the hives yesterday was *5s. 4d.*, which seems rather much. Is there not a cheaper mode of conveyance, as it adds to the cost of the hive considerably? I attribute the healthy state of my bees to having fed them regularly with Abbott's barley-sugar.'—S. T.

[We have no control over railway charges, and when hives are wanted in a hurry they must go by quickest route. A passenger weighing two hundred pounds or more can travel by third-class train from London to Leicester for about 8*s.*, while a parcel of thirty pounds in the guard's van is charged *5s. 4d.* In the one case an accident might cost a railway company 1000*l.*, while in the other the risk is only about 30*s.* Surely this is an anomaly. A remedy, however, could be provided by ordering hives sufficiently early to permit their going by goods train, a practice we have often recommended; and emergencies ought to be provided for by bee-keepers having on hand a few Makeshift hives, the frames of which could be exchanged with those of superior class at a later period.—Ed.]

Barmeath, Ireland, June 18.—Swarms in Wooden Foundation.—'The swarms (five) arrived quite safely, not a bee lost. I like the look of the wood-foundation, and will give it a trial.'

Ulverston.—'My bees are getting honey very fast just now.'—W. B. Butler.

Sevenoaks.—'With my little influence, I am trying to induce the cottagers to use the bar-frame hive, but they want a lot of persuasion to get them out of their old-fashioned notions. I had some very good swarms in May this year, and have taken two supers off (small ones). I can drop you a line now and then, stating the condition of this district. They had very bad luck last winter—some lost all; some have one left to start with this season. I have twelve lots now, and intend keeping nine stocks next winter, if all be well. Hoping we shall have a better honey season this year.'—G. Sands.

Bee-Keeping in Ireland.—'I secured three swarms in one day. Before leaving for work in the morning, I told the boy (twelve years) to cut a (*sciog*) whitethorn bush, and plant it in the middle of the potato patch. I told him the bees would knit in the bush, and that day two out of three swarms went into it. After I returned that evening I had proceeded well in placing two swarms into the bar-framers (the first ever put into such this side of Wicklow, save those of Henry Dunning, see last month's *Journal*). The boy in bringing up the third swarm let it fall, being stung in wrist. Oh! what a mess of bees seething upon the ground. Nothing daunted, I took an empty step, placed it over the fallen bees, and all went into it. I then gave the skep a smart blow at the entrance of a frame-hive, all commenced in a stream to go into it, and I had now completely finished by 9 p.m. Bees work from 5 a.m. till 8 p.m. (good for blacks.) I have three old straw stocks I'll get you and Mr. Carr to try your hand on at Dublin. I gave a full frame of old comb in the middle of each frame-hive. I'll have eight long frames now. If it was not for *Journal* I would not have the pluck to stick to it.—J. Traynor.'

Blair Athole.—'I had a queen (Italian) from you last year, and such fine yellow fellows are seldom seen anywhere; and as for temper they do not seem to have any. I do not say this of them because I never put it to the

test. But just think of taking out frame after frame, cutting the comb out—first shaking the bees off, but still a good many on frame—and fitting it into a different sized frame, and all this rather rough job without either veil, gloves, or even smoke, which is considered so essential in operations of this sort, and yet without a single attempt to sting. I am anxious to have this queen duplicated if possible, and in view of this I mean to have a few cells raised, and then form nuclei, and along with another good hive full of drones sending them to a distance of twelve miles from the nearest apiary. Will they not breed pure at that distance?—ANGUS CAMERON.'

Haltwhistle, Northumberland.—Casts not to be despised.—'I have a hive that was a second swarm on the 8th of August, 1879, and it has cast a splendid first swarm on the 12th June, it being the first heard of in this cold district.—J. LEAKE.'

Gloves.—'Is there any means of preventing bees from stinging the *gloves* which are used in operating upon them? Gloves seem to become impregnated with poison when once a bee's sting is thrust into them, and the bees fiercely attack them again, apparently smelling the poison.'—AN AMATEUR.

[Kindly read reply to R. Ranger.—ED.]

Maiden Newton, Dorchester.—'Your junior will remember me as his assistant two years ago at Dorchester. Out of my seven hives I have only had yet two first swarms and one second. I have not taken artificial ones this year. All other bees (with two exceptions) within two or three miles are dead. The exceptions were the only ones who fed, or who fed in any quantity.'—JOHN BROWN.

Queries and Replies.

QUERY No. 341.—*Bee Gloves and Sting Poison.*—Is it a bad plan to wear soft leather gloves, as when I am doing anything to a hive when open, they fly on to the gloves and sting; I have had as many as five or six all stinging into the glove at the same time, although being of a stout substance, they do not reach my skin. I notice when they settle on clothing they do not try to sting, but soon fly off again. I began by not wearing either gloves or veil, but got so badly stung several times, that I have been compelled to wear both, much against my will.'—ROBERT RANGER, *Maidenhead, June* 18.

REPLY TO QUERY No. 341.—Leather gloves will protect the hands, but having been stung, accidentally or otherwise, they absorb the poison, and give forth its odour, which is specially irritating to bees, and provokes them to sting the same part repeatedly, causing much loss of bee life, for the bees cannot withdraw their stings from them. It is a mistake to suppose that bees do not sting other parts of the clothing, but as a rule, they do not reach the person; and as they are generally able to withdraw their weapons, the attempts are not often noticed. The poison of a bee is its means of alarm in the hive. Being highly volatile, its emission fills the air with its odour, and, like the sentinel's gun-fire, alarms the garrison, and the bees fly from all points to the focus, guided by their sense of smell, which is highly acute; and then, as if they had found their enemy, they pour out their vengeance. Most persons who have been stung are painfully aware of the quickness with which another bee will endeavour to repeat the infliction near the same spot; and there are few who have had an angry bee in their hair but have a lively recollection of how speedily a dozen others will come to his assistance. The best gloves to wear are those made of and coated with indiarubber, the bees *can* sting through it, ordinarily, but they do not like to do so, and if they by accident inflict a sting, the poison is not absorbed, and the gloves are not rendered personally offensive as are those of leather.—ED.

NOTICES TO CORRESPONDENTS & INQUIRERS.

W. J. G.—The queen will be none the worse for her honey-bath, as the bees will quickly clean it all from her body. The pushing about is of no consequence. All queenless stocks build drone-comb if they build at all, and that is a reason why the queen should always be present with the artificial swarm. You cannot make the bees of the queenless swarm build worker comb; it will be better to fill the hive with it from other hives, and let those with queens build new combs. If you fill the frames with worker foundation, they will do so quickly, and little time will be lost. Remove all the drone comb that is newly-built, and use it as attraction comb for supers. The sheets of foundation will be much safer if put between two finished combs. The mode of quieting bees was fully described in last month's *Journal*. Putting a super on a hive without a queen-excluder would probably tempt the bees into it more quickly, but it would permit of the queen's presence also, and instead of honey you might get brood. Try the effect of giving entrance to the supers along the back of the hive only, instead of over the brood nest, even though the super itself covers the whole hive. It is natural for the bees to store their honey in the innermost places, and they do not seem to mind taking it right through the hive.

GOLDINGS HILL.—All hive bees are amenable to the quieting process described on p. 26 of June *Journal*, the smoke is used to alarm the bees, but it is necessary that they should be gorged with honey or syrup, or they will not be quiet for many minutes unless killed outright. By multiplying the Ligurian drones early in the spring that they may be flying before those of our native bees have been normally produced, the chances are greatly in favour of the young Ligurian queens mating with them and of the breed remaining pure. Hybrids are three to two better than blacks, and they have not the same swarming fever as Ligurians.

J. BAKER. *Darlington.*—Exchanging the queen of a swarm. Catch the queen of the swarm, and encage her first in an Abbott's cage for twenty-four hours while the bees get fairly to work, then without disturbing the cage or the bees, get her out and insert the new queen leaving her encaged for forty-eight hours and feeding continuously in contrast with the cage so that the queen may get a supply. Exchanging the queen of a swarm is bad in principle; it is much easier to do it a short time beforehand and thus avoid the danger attending it at that critical time, and, if the improved queen is of superior breed there will be young queens forthcoming raised from her own larvæ.

J. HOLMES.—*Markings of Bees.*—Ligurian queens vary much in colour and marking, and the quality of their fertilisation, whether black or otherwise, does not make any difference in them. No one can tell a hybridized Ligurian or black queen from a pure one, both may be equally fair, or dark, and only 'by their fruits shall ye know them.' The pure have pure offspring evenly marked and of the same appearance, while the hybridized have bees of various colours, some 'looking' pure, others with unmistakeable but uneven bars of colour, and not a few black or only slightly tinged with gold, but they are all alike vigorous as workers, and thoroughly good defenders of their homes. The drones of black queens are black, those of Ligurians are often as dark, but sometimes they bear beautiful badges of gold on their abdomens.

'BEE JOURNAL' COMPLETE.—Does anyone want a complete set of Journals, from its beginning to the end of Vol. VII.? A gentleman, bankrupt in bees through foul brood, wishes to give up, having broken up his hives, and will sell his Journals, some of which are out of print, for a fair price. Complete sets are very scarce

THE

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AND BEE KEEPER'S ADVISER.

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Editorial, Notices, &c.

AUGUST.

The weather during the past month, though not universally agreeable, has stamped July in red letters in the diary of bee-culture, its atmospheric conditions, though often proclaimed in thunder, having caused a yield of honey that has made the hearts of careful bee-keepers to rejoice exceedingly. There may be localities and conditions in which this feeling is not reciprocated, but as a rule the land is literally flowing with honey, much of which will be lost through lack of bees; but the exhibits at coming shows, as was the case at Windsor on the 13th ultimo, will prove our assertion to the hilt. From reports daily received the bees are 'doing wonders,' hives attaining 'immense weight,' and supers being 'crammed' as tier upon tier are piled upon them. The extractor also is doing great service, and where last year there were empty vessels, honey has become so abundant that the owners scarcely know what to do with it; while on-lookers stand amazed at the results attained by the 'new-fangled' system. It gives us immense pleasure to be able to report this state of bee-keeping affairs after the adverse conditions under which we have laboured in our advocacy of the modern system, —a system which shines out the more brightly when contrasted with that upheld by fogeyism and ignorance, but which has led to destruction.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

Prevent Robbing.—During the present month the honey harvest in many parts of this country will have come to an end, and supers will (or ought to) have been removed, and then will come the necessity for considering the future well-being of the colonies. There will be stocks as a matter of course that will have repudiated the super receptacles provided for their accommodation, and their surplus will have been stored within their brood compartment, or hive proper; and there will be others that, from queenlessness, over-swarming, being of themselves late or weak swarms, or from being in poor localities, or suffering from disease, will not have laid by a surplus at all. At the end of the harvest, bees that have been strong enough to store a surplus will be in fit condition for robbing those that are weaker; and if they find a hive weak and assailable, and commence depredations, they will not lose their propensity for thieving as long as they can find means of gratifying it. Here then is a grave source of danger, and it behoves every one with weak stocks, more particularly if they are diseased, to take every possible care to prevent the commencement of brigandage. Prevention is better than cure, and therefore it would be well to observe the following rules at this time of year:—

1. Do not open a weak stock during the day when bees are abroad. There will be a hundred rovers from strong hives to one of the weaker, and an attack can have but one result.

2. Keep entrances to weak stocks partly closed, so that only two bees can pass.

3. Do not feed weak stocks during the day, and do not on any consideration leave syrup or honey about where bees can get at it. If any gets spilled, wipe it up, and smear a little carbolic acid on the place.

4. After taking honey in any way, do not give the bees the refuse comb, or the old hives or implements wet with honey to clear up, near their hives. The reeking odour of honey fills the atmosphere, and may attract foragers from other apiaries.

5. Do not attempt uniting until evening, when strong stocks will be at home, and even then it would be well to close their entrances (giving plenty of top ventilation) while the operations are being proceeded with.

6. Remember that though, during a honey harvest, when bees are too busy in the fields to pay attention to little matters at home, the foregoing cautions are scarcely needed, their observance is imperative on its cessation.

7. Remember also that when robbing has commenced, the delay which occurs in seeking aid to stop it gives opportunity for its fulfilment, and encourages the bees' propensity for thieving.

8. If robbing should take place, remove the victim stock to a dark cellar, and put an empty hive in its place as a baulk to the thieves. Having no cellar, set the robbed hive upon the ground in a shady place, and invert over it a large tub, isolating the bees by banking earth around its bottom edge, if put over an untrapped ventilating water-drain (not a sewer) so much the better. At evening unite the stock to another near its own stand, in the usual way.

Sending to the Heather.—In many districts there will yet be a harvest of heather or moor honey, to which bees will be sent from long distances; and as there is danger to stocks in transit through the heat that is generated by the confined bees, we would advise that the majority be driven out from their hives, and that they be packed to travel as swarms. A few days since we removed six heavy May swarms of this year's nearly forty miles in perfect safety, by road and rail. They were in round-topped skeps, and our mode of procedure was as follows:—

About midday swarms were driven from the hives, and placed upon their old stands on squares of strainer cloth, the skeps containing them being tilted to give easy access to returning bees. The hives of comb with only a few hundred bees in them were packed with paper, a fold like a V being slipped into each of the spaces between them, and then filled up to fit comfortably with other papers or bunches of grass rolled on paper; the object being to prevent the combs leaning or falling sideways. The combs being so far secured, and the hives covered over with strainer-cloth, it was necessary to steady the hives themselves, or, being round-topped, they would roll about 'anyhow,' for which purpose large linen handkerchiefs and a barrow full of long grass had been provided, the former being laid upon the ground, and big bunches of the latter formed into the shape of large bottomless birds'-nests, were laid upon them. The hives were then set upside down in the nests, the four corners of the handkerchief gathered up and tied together to form one hand-hold, and the packing was done. The bunches of grass formed capital cushions (or buffers) to prevent injury by jolting, and there only being one hand-hold to lift by, the hives when handled were carried steadily. These are more important matters than is generally supposed, as the kerchief corners are often tied in pairs only, and the hive, lifted by one pair only, gets pulled into oval shape, and the combs become crushed and broken. When packed, each hive was set in the shade to cool a little, and at evening the swarms, already set on strainer-canvass, were packed, and carried bottom upwards safely home.

In the transit of bees, one must not entrust railway guards or porters with them; these gentlemen have a way of packing things the reverse of healthy for bees, and insist on squatting one hive upon another, and if not prevented will turn the hive to its natural position. Their mothers all kept bees, so they ought to know the right side up of a hive; and thus the bees get suffocated. The best way of sending swarms is in boxes ventilated on all sides, and so fitted with cross ledges that accidental suffocation shall be impossible.

Packing Sections.—We of late purchased a parcel of one pound, one piece, American sections of honey, and requested that they should be carefully packed and sent in a hamper of straw, that they might be saved from the jarring and rough usage of a railway journey, but the vendor sent them wrapped separately in paper, and tightly packed in a square box, with nothing beneath to save them. On arriving there were only four out of twenty perfect, the remainder, having been jolted loose, were bleeding and damaged, and the paper was saturated with honey. None of the sections had been filled with comb, nor did they weigh one pound each, including the section-box, a fact attributable to their having been placed close upon the frames of the hive, with no space between through which the bees could pass. The sections by handling came undone, as they had not been nailed or glued together, but had been simply pressed together at the tenoned ends. Sections in order to travel well should be built solid to the top and bottom, or they should be packed solidly with paper, and carried bottom upwards, the underside of the package being well cushioned with straw, or other elastic material.

HERTFORDSHIRE BEE-KEEPERS' ASSOCIATION.

We understand that T. W. Cowan, Esq., will act as the Judge of the Local Classes at the Show of the Hertfordshire Bee-keepers' Association at Gorhambury, near St. Alban's, on Friday and Saturday, August 20 and 21, and that two Hertfordshire gentlemen will act as Judges in the Classes open to all England. We hope that the members of the B. B. K. A. residing out of Hertfordshire will support their Hon. Sec., the Rev. Herbert R. Peel, by contributing a goodly show of exhibits on this occasion.

THE TOUR OF THE BRITISH BEE TENT IN IRELAND.

Up to the present time four fixtures have been arranged at which the art of bee-keeping will be taught by lectures and practical operations in the Association Tent; but we hope the intended usefulness of the visit will not be confined to those occasions only. The first meeting will take place at Clonmel, in connexion with the Royal Agricultural Society's Show, and will continue during August 11, 12, and 13, commencing each day at noon. The next meeting is arranged for Maryborough, in connexion with the Maryborough County Agricultural Society's Show, which takes place on the 18th August. The next will be at Newry on the 28th, and the last, as arranged, on the 2nd September, at Newtownards great Flower Show (near Belfast). It will thus be seen that though we (which *we* includes our esteemed friend W. Carr, Esq., of Newton Heath, Manchester) shall be in Ireland on Tent service for twenty-three days at the least, we shall only be publicly engaged (as at present arranged) on six of the days. There will be plenty of opportunities for other engagements, both public and private, should they be desired, as, in the interest of bee-culture, we trust will be the case. The Rev. H. R. Peel has proposed to the Rev. Canon Bagot that a steward shall be appointed to make arrangements for and superintend the bee-work in each of the localities named; and that being effected and publicly notified, the arrangements of other *séances* will be easy.

Bees for Manipulation.—It will be easily understood that if we bring bees with us from England for manipulation, an impression will probably be created that they have been previously 'tamed,' or so treated as to be harmless; and the public may in such case lose faith in the lessons we hope to teach and illustrate; and with this view in mind, we sincerely hope, aye, and beg if need be, that we may be furnished with native bees at each of the places to be visited. Clonmel being the first 'pitch' of the Tent, and the operations extending over three days, it will be obvious that with a limited number of stocks such as it would be possible to bring from England, the poor bees would be 'wearied to death' by continual exhibition, or the operations would have to be limited in variety and frequency. To prevent this, and the chance of misapprehension as to the *bona fides* of the manipulation as above suggested, we offer, as far as time will permit, to perform the following operations gratuitously in the Bee Tent subject to arrangement with the Rev. Canon Bagot, or the steward he may appoint. August being 'taking-up time' in many localities, we will exhibit the best means of taking honey from skeps, and transferring the surplus contents (that otherwise would be wasted) to frame-hives, *showing* how to do what one reads of as transferring in autumn. Anyone, therefore, who will provide a stock of bees, a framed hive, and half-a-dozen sheets of Raitt's or Abbott's foundation (for either will be strong enough for the purpose) may have the honey removed for themselves, and the bees and brood disposed in their new hive, so that with the aid of a few pounds of sugar properly administered they will become a valuable stock for future profit. This operation, or rather series of operations, involves the processes of 'quieting bees,' 'driving bees,' 'transferring combs and bees,' 'extracting honey,' 'fixing comb-foundations,' 'finding the queen,' and (frequently) of 'uniting bees;' and as during the work the contents of the hive will be subject-matter for full explanation and observation, we trust much interest will be created, and that there will be no lack of bees or visitors at the exhibitions.

CYPRIAN AND SYRIAN BEES.

Notwithstanding the 'faint praise' which the Judges at the late South Kensington Show awarded to the exhibition of Foreign Bees, we are quite sure that the interest in them which took Mr. Jones to Cyprus and the Holy Land in search of the 'Simon pure' is shared by many British bee-keepers. We have had numerous letters on the subject of queen-cells per post and per rail, and have given it due consideration, but, accepting the experience of American bee-keepers, have concluded that it will not be safe to send such tender articles in either way. We prefer to send live queens, and are breeding for the purpose; we have lots of Syrian (Holy Land) drone brood, and hope to keep the drones alive till late, and so give every possible chance for yellow impregnation of young Syrian queens. We have on hand four that have thus mated, and one that has the black cross; and we are breeding others as fast as we can. We propose to send out newly-hatched Cyprians or Syrians for 5*s*. each, laying ditto (chance the impregnation) 10*s*. and those that produce yellow bees only 20*s*. Queens that have mated with black drones will be 5*s*. each.

COMB-FOUNDATION.

Mr. D. A. Jones, of Canada, 'after he got home' (*vide Gleanings in Bee-culture* for July), gives 'Three cheers for C. N. Abbott, of the *B. B. J.* He has made foundation on wood a success. I saw it in his yard while I was giving my bees a purifying flight there. Mr. Abbott is a live progressive bee-keeper, chock-full of

new ideas and constantly trying new inventions, and is fast bringing up bee-culture to a high standard in England.' There is more on the subject; but Mr. Jones tells our transatlantic friends that 'the comb must be put very close until the bees get the cells started, and then they can be put at the usual distance apart,' which is an *invention* entirely his own, for our frames CANNOT be put less than the 'usual' distance apart, a feature we claim for them as most valuable in amateur bee-keeping. Mr. Root makes reference to some experiments he has made with wood as a base for foundation, and insinuates that we use him as a base for our experiments; which we utterly deny, and shall be glad if he can give colourable reasons for the aspersion.

Mr. Jones has also given a description of Mr. Cheshire's wire rakes, and makes him (Mr. C.) say that 'he had just invented a new process of putting in comb-foundation, and preventing sagging, *even though it were only half as thick as foundation usually is*;' and we sincerely hope it will be found to be so; but certainly Mr. Cheshire did not say so—at least, in our presence. We call attention to the matter because there may be attempts made to fix foundation that will not bear the bees' weight, and thus a good thing may get a bad name.

Mr. Root thinks so highly of the invention that he apostrophises thus: 'Mr. Cheshire, your experiments are most valuable, and the united world of bee-keepers owes you its thanks'; but he adds, 'Most of your experiments I have gone over in past years, but the little rake is entirely your own invention, the nearest approach to it I have ever heard of was given several years ago in *Gleanings*, where R. S. Becktell used little strips of wood which were afterwards pulled out.' And so we Britishers must console ourselves with the admission that we have succeeded where American inventors have failed, and we think Mr. Root is very merciful in admitting so much. Mr. Root, however, denies Mr. Cheshire's assertion that the wire in the wired foundation kills the brood.

Individually, we feel 'muchly' the high wind which Mr. Jones has used in our favour, but the receipt of the promised Cyprian queens would have been far more agreeable.

BRITISH BEE-KEEPERS' ASSOCIATION SHOW AT SOUTH KENSINGTON.

THE sixth great exhibition of bees and their produce, hives, and bee-furniture, was opened on Tuesday, the 27th ult., at the Royal Horticultural Society's Gardens, South Kensington, under the presidency of the Baroness Burdett-Coutts, and will continue open until the 2nd inst., to give Bank Holiday visitors to the beautiful grounds an opportunity of seeing the display. Seeing that bank holidays are an institution brought about by Sir John Lubbock, a former President of the Bee-keepers' Association, this arrangement is appropriate, and we trust will be appreciated on all sides. The day was lovely, not a cloud dimming the brightness of the warm sunshine, and the attendance of visitors both numerous and select. The entries for bees, hives, and bee-furniture, were not numerous as compared with former years, nor was there any speciality, if we may be permitted to except our improved Observatory hive, so constructed that though the bees live in frames of comb side by side as in ordinary hives, they can be separated, turned about, brought to the glass side of the hive, and replaced without difficulty or injury to a single bee. Cyprian and Holyland bees were exhibited, also Circassian and Hungarian. The exhibits in the honey classes were excellent as regarded native produce, but of foreign exhibits, 'Oh, what a falling off was there, my countrymen!' the meagre exhibit, as compared with that of last year at Kilburn, when timid bee-keepers were frightened out of their wits by the prospected 'deluge' of honey from America which was to engulf British apiculture. This time America was not at Kensington, and it may be concluded either that honey is not so plentiful there as has been represented, or that the 'co-operation' brought about by Bee-keepers' Associations has so far facilitated production and sale as to fence the foreigner out of the market.

The following is the list of awards:—

HIVES AND BEES.—Class 1—For the best Frame Hive, fully stocked with bees and combs, with sectional supers in process of filling, separators and end glass to be in position; due consideration to be given to straightness of combs, scarcity of drone-cells in Breeding Hive, amount of brood and strength of population, cleanliness of the whole. The facilities afforded by the Hive for examination when supers are filling to be taken into consideration. 1st, W. Hunt, S. Warnborough, silver medal and 40*s.*; 2nd, W. Martin, Hampstead, bronze medal and 20*s.* Class 2—For the best stock of Ligurian Bees: 1st, S. J. Baldwin, Upper Norwood, silver medal; 2nd, Neighbour and Sons, London, bronze medal. Class 3—For the best stock of Cyprian Bees: 1st, Abbott Bros., Southall, silver medal. Class 4—For the best stock of other Foreign Bees: 1st, Neighbour and Sons, silver medal; 2nd, Abbott Bros., bronze medal. Class 5—For the best Hive for observation purposes, all combs to be visible on both sides, to be exhibited stocked with Bees and their Queen: 1st, Abbott Bros., silver medal; 2nd, R. Scott, Godstone, bronze medal. Class 6—For the best Moveable Comb Hive. These Hives are exhibited in duplicate, firstly, for summer use, with facilities for harvesting Honey; secondly, with arrangements for winter use: 1st, Neighbour and Sons, silver medal; 2nd, Abbott Bros., bronze medal; 3rd, Green and Sons, Rainham, certificate. J. Clapp, commended. Class 7—For the best Frame Hive of a substantial character for general use in an Apiary. Price not to exceed 15*s.*: 1st, Green and Sons, silver medal; 2nd, J. M. Hooker, Sevenoaks, bronze medal; 3rd, S. J. Baldwin, certificate; W. Hollands, Croydon, commended. Class 8—For the most economical (best and cheapest) Hive, on the moveable comb principle, for Cottagers' use, with arrangements for summer and winter use. Price not to exceed 10*s.* 6*d.*: 1st, Green and Sons,* silver medal; 2nd, R. McGregor, Banchory, bronze medal; 3rd, W. Hollands, certificate; H. Parson, Guildford, commended. Class 9—For the best Straw Hive for depriving purposes, cost to be taken into consideration. Price not to exceed 5*s.*: T. Sells, bronze medal.

* This was undoubtedly the cheapest hive for the price in the whole Show.—ED.

Supers.—Class 10—For the cheapest, neatest, and best Supers for harvesting Honey in the Comb in a saleable form: 1st, Green and Sons, silver medal; 2nd, J. M. Hooker, bronze medal; 3rd, J. Clapp, certificate.

Honey.—Class 11—For the best exhibition of Super Honey from one Apiary: 1st, W. E. Warren, Isleworth, 40*s.*; 2nd, S. Thorne, Baldock, 20*s.*; Rev. E. Bartrum, Great Berkhamstead, 10*s.* Class 12—For the best Super of Honey. The Super to be of wood, straw, or of wood in combination with glass or straw: 1st, S. Thorne, 20*s.*; 2nd, W. E. Bacon, Ashwell, 15*s.*; 3rd, W. H. Dunman, Dorchester, 12*s.* 6*d.*; 4th, Rev. E. Bartrum, 7*s.* 6*d.*; 5th, Mrs. Leigh Spencer, Bedford, 5*s.*; Mrs. L. Spencer, commended. Class 13—For the best Glass Super of Honey: 1st, Rev. F. Jenyns, Knebworth, 20*s.*; 2nd, W. Sells, Uffington, 15*s.*; 3rd, W. Sells, 12*s.* 6*d.*; 4th, R. Scott, 7*s.* 6*d.*; 5th, W. E. Warren, 5*s.* Class 14—For the best exhibition of Comb Honey in Sections, each not more than 3 lbs. in weight, the total weight of each entry not to be less than 20 lbs.: 1st, J. Thorne, 30*s.*; 2nd, S. Thorne, 20*s.*; 3rd, T. W. Cowan, Horsham, 15*s.*; 4th, W. E. Warren, 10*s.*; 5th, W. H. Dunman, 5*s.* In Class 14, aggregate weight not to be taken into consideration. Class 15—For the best 10 Sections of Comb Honey, each Section weighing not more than 3 lbs.: 1st, S. Thorne, 20*s.*; 2nd, Miss Gayton, Much Hadham, 10*s.*; 3rd, P. Skinner, Swanley, 5*s.*; extra prize, F. Cheshire, Acton. Class 17—For the largest and best exhibition of Run or Extracted Honey in Glasses, not to exceed 2 lbs. each: 1st, R. Scott, 30*s.*; 2nd, F. H. Lemare, Guildford, 20*s.*; 3rd, S. Thorne, 12*s.* 6*d.*; 4th, W. Sells, 7*s.* 6*d.*; J. Walton, commended.

English Comb Foundation.—Class 18—For the best sample of Comb Foundation (worker cells) made of pure Bees' Wax, not less than 10 lbs. in weight, manufactured in the United Kingdom, with price per pound attached: 1st, W. Raitt, Blairgowrie, silver medal.

Cottagers' Classes.—Class 19—For the largest and best exhibition of Comb Honey, the property of one Exhibitor, and gathered by his own Bees: 1st, P. Skinner, 20*s.* and hive; 2nd, M. Freeman, Slinfold, 10*s.* and hive; 3rd, T. Sells, 5*s.* and certificate. Class 20—For the best Super of Honey: 1st, P. Skinner, 20*s.*; 2nd, H. Ellingham, Heston, 15*s.*; 3rd, M. Wood, Godstone, 10*s.*; 4th, T. Sells, 5*s.* Class 21—For the largest and best exhibition of Comb Honey in Sections, each Section not to exceed 3 lbs. in weight: 1st, P. Skinner, 20*s.*; 2nd, W. Martin, 15*s.*; 3rd, W. Hunt, 10*s.*; 4th, T. Sells, 5*s.* Class 22—For the best exhibition of Run or Extracted Honey in small glass jars, not to exceed 2 lbs. each. Total weight of each entry not to be less than 10 lbs.: 1st, J. Walton, 20*s.*; 2nd, P. Skinner, 15*s.*; 3rd, M. Wood, 10*s.*; 4th, T. Sells, 5*s.*

Foreign and Colonial Classes.—Class 24—For the best exhibition of Run or Extracted Honey in glass jars, not to exceed 2 lbs. each: 2nd, Lucio Paglia, 15*s.* Class 25—For the best sample of Comb Foundation (worker cells) made of pure Bees' Wax, not less than 10 lbs. in weight, with price per pound attached: Newman and Sons, Chicago, bronze medal.

Comestibles.—Class 26—For the best Mead or Metheglin made from Honey, with recipe attached: 1st, Abbott Bros., bronze medal; 2nd, R. Scott, certificate.

Miscellaneous.—Class 27—For the best and largest collection of Hives and Bee Furniture, most applicable to Modern Bee-keeping, no two articles to be alike: 1st, Neighbour and Sons, silver medal. Class 28—For the best Extractor: 1st, T. W. Cowan, silver medal; 2nd, J. Walton, bronze medal; 3rd, Abbott Bros., certificate. Class 29—For the finest sample of Pure Bees' Wax, not less than 3 lbs. in weight, produced by the Exhibitor's own Bees: 1st, W. Hunt, 10*s.*; 2nd, W. Sells, 7*s.* 6*d.*; 3rd, J. M. Hooker, 5*s.*; Lucio Paglia, Italy, 2*s.* 6*d.* Class 30—For any Invention calculated in the opinion of the Judges to advance the culture of Bees: F. Cheshire (new system to prevent sagging wires), silver medal; commended, T. W. Cowan (swarm box), Green and Sons (regulating feeding stage and bottle), F. Cheshire (divisional feeder). Class 31—For the best Microscopic Slides illustrating the Natural History of the Honey Bee: J. Hunter, Cranbourne Street, Leicester Square, silver medal. Class 32—For the best and largest display of British Bee Flora, in a dried state or otherwise; each Plant or Specimen must have a card attached stating time of flowering, duration of bloom, and any other particulars calculated to be of interest to Bee-keepers: 1st, W. Ingram, Belvoir, silver medal; 2nd, A. G. Gibbs, St. Albans, bronze medal. Class 34—For the best Set of Diagrams illustrating the Honey Bee: Abbott Bros., bronze medal.

Driving Competition.—For the Competitor who shall, in the neatest, quickest, and most complete manner, drive out the Bees from a Straw Skep, capture, and exhibit the Queen: 1st, J. Walton, 4 mins. 15 secs., silver medal and 20*s.*; 2nd, J. Filbee, 4 mins. 15 secs., bronze medal and 10*s.*; 3rd, W. Hunt, 8 mins. 35 secs., certificate and 5*s.*

Quarterly Meeting, July 27th.

The Quarterly Meeting of the Committee for conferring with the representatives of the County Associations was held in the Western Arcade of the Royal Horticultural Gardens, South Kensington, on Tuesday, July 27th. Present—Mr. T. W. Cowan (in the chair), Mr. F. Cheshire, Mr. C. N. Abbott, Mr. J. M. Hooker, Mr. W. O'B. Glennie, Rev. G. Raynor, Rev. H. R. Peel (*Hon. Sec.*), Mr. W. Griffin (representative of Devon and Exeter Association), Rev. A. Roberts (Hertfordshire), Mr. J. N. Bower (Warwickshire), Mr. F. Lemare (Surrey), Hon. and Rev. C. Feilding and Mr. C. Fletcher (Shropshire), and Mr. J. Garrett (West Kent).

The minutes of the last Quarterly Meeting were read, confirmed by the meeting, and signed by the chairman.

The Suggested Conditions of Affiliation for County Associations desiring to co-operate with the British Bee-Keepers' Association were read by the chairman, and discussed by the meeting.

With regard to the transmission of the Bee Tent from one County Association to another, it was proposed by Mr. F. Cheshire, and seconded by the Rev. G. Raynor, 'That, in the event of the Tent passing from one County Association to another, the expense shall be divided between them in a manner decided by the Central Association, provided always that the cost to either shall not exceed the carriage to or from London.' Carried unanimously.

With regard to 'Suggestions to Affiliated Associations,' No. V., it was proposed by Mr. W. N. Griffin, and seconded by the Rev. H. R. Peel, 'That in Suggestion No. V. all the words after "4, List of Subscribers," be struck out.' Carried unanimously.

A proposition, made by Mr. J. N. Bower (the representative of the Warwickshire Association), that the *Handbook for Cottagers* should be issued to secretaries of County Associations, taking a quantity of not less than two or three hundred, at the cost price, was referred to the consideration of the Committee of the British Bee-Keepers' Association at a future meeting.

At six o'clock Mr. Cheshire delivered a lecture 'On the relations of Bees to Flowers,' which we purpose giving *in extenso* in our next issue.

ANNUAL GENERAL MEETING.

The Annual General Meeting of the Association was held in the Conservatory, at 6 p.m., July 28th, 1880, the Baroness Burdett-Coutts presiding. Present, Hon. and Rev. C. W. A. Feilding (Hon. Sec. of Salop Beekeepers' Association), Charles E. Fletcher, W. W. Dunman (Hon. Sec. of Dorset Beekeepers' Association), A. Sanders, Mrs.

Fielder, F. H. Meggy, Rev. Thos. Sissons (Shooter's Hill), F. Lyon, C. J. Stevens, T. De L. Hardy, T. B. Blow, T. B. Latchmore, E. S. Wheeller, W. A. Kirchner, Col. M. Lockwood, Captain Chas. D. Campbell, R.N., Fred. H. Lemare, Rev. J. Lawson Sisson, John Walton, Piers Edgcumbe Martin, George Green, Richard Scott, John M. Hooker, J. Thomas Sells, William Groombridge, F. Cheshire, Samuel Thorne, Alfred Neighbour, W. M. Kingsmill, Rev. Herbert R. Peel.

Minutes of last meeting were read and confirmed.

The Presidents of the County Associations were elected Vice-Presidents of the Parent Association as follows:—

1. Bath and Bucks, H.R.H. Princess Christian. 2. Dorset, the Hon. Colonel Edward Digby, M.P. 3. Devon and Exeter, the Right Worshipful the Mayor of Exeter. 4. Essex, the Earl of Rosslyn. 5. Hertfordshire, the Earl of Verulam. 6. Lincolnshire, the Bishop Suffragan of Nottingham. 7. Shropshire, Lord Berwick. 8. Suffolk, Lord Rendlesham. 9. Surrey, H.R.H. the Duke of Connaught. 10. West Kent, the Right Rev. the Archbishop of Canterbury. 11. Warwickshire, Lord Leigh.

Deputation to Ireland.—The Hon. Sec. reported that although relations between landlord and tenant in Ireland were somewhat unsettled, he had not felt it wise to lean to the suggestion that the expedition to Ireland should be postponed, but the hand having been put to the plough he had determined not to look back. Messrs. Abbott and Carr would visit Clonmel, Maryborough, Newry, Newtownards; and were ready also to make further visits, according to arrangement at times not at present disposed of.

Carlisle Show.—The Hon. Sec. made a statement respecting Carlisle Show that much interest had been awakened and good done; and called upon Mr. Cheshire to give some account of the way in which the Bee Tent had been received.

Mr. Cheshire stated that the interest at Carlisle had almost reached excitement, and that it had been necessary to remove the outside canvas in order to satisfy the crowds desiring to get some sight of the operation.

Dairy Show.—The Hon. Sec. reported that all arrangements respecting the Dairy Show had been made, and that a good exhibition, associating again milk and honey, was expected.

Life Memberships.—The Hon. Sec. raised the question as to whether Life Memberships should not be raised to 10*l.*, since 5*l.*, as had been resolved at the last General Meeting, when funded, produced only 3*s.* 6*d.* or 4*s.* annually.

The matter was discussed by General Sanders, Mr. Dunman, Mr. Lemare, and Mr. Lyon. The discussion was dropped, and deferred to next meeting.

Lord Spencer's reply to the Secretary's communication respecting the appointment of a Professorship of Bee-culture.

The Secretary explained that the General Election had, by changing Government, displaced Lord George Hamilton as President of the Committee of Council on Education, and that it was decided at last committee meeting that Lord Spencer should be communicated with before the estimates were presented on October 8th.

Rev. E. Bartrum had prepared the following address:—

'There can be no question about the fact that in spite of the exertions of the British Bee-keepers' Association, bee-keeping in England is in a backward condition, and that as a people we are surpassed by the Germans, French, and the Americans, in the practice of this art. The most antiquated methods of bee-keeping are still popular among us, and consequently not a tithe of the quantity of honey that might be secured in our own country is obtained in England, and a large amount of honey is now imported from Germany, the United States, Canada, and elsewhere. To promote then a more general and more scientific knowledge of bee-keeping, and thereby to largely increase the supply of food raised in our own land, it is suggested that a Professor of Bee-keeping shall be appointed in connexion with the Education Department; and the following resolution was passed unanimously at the General Meeting of the B. B. K. A. on the 18th of February last, the Baroness Burdett-Coutts being President:—

'"That in the opinion of this Association it is very desirable that a Professorship of Bee-culture should be established in connexion with the Science and Art Department at South Kensington."

'The duties of such a Professor would be very much as follows:—

'I. To visit the Training Colleges connected with the Education Department three times a-year at least, to deliver lectures at such colleges, and to assist in the management of the hives belonging to such colleges where the neighbourhood allowed any prospect of moderate success. His visits should embrace the colleges in England, Wales, perhaps also Ireland. In Scotland the art of bee-keeping is better known, and remarkable results are consequently obtained in very many instances. He would thus explain to the teachers who in course of time would be dispersed throughout the entire land the importance of the moveable comb hives, extractors, comb-foundation, supers, sections, and other such matters, subjects about which the public, and especially the lower orders, know absolutely nothing, but a knowledge of which is essential to that success which, with such knowledge, can undoubtedly be attained.

'II. To visit the universities, the various county schools, the agricultural and other colleges and schools, not necessarily connected with the government, the authorities of which might be willing to receive him and endeavour thereby to diffuse an intelligent knowledge of bee-keeping.

'III. To visit the various agricultural centres and other localities where his presence would in any way be welcomed for the same purpose.

'IV. To deliver lectures at South Kensington at stated intervals on subjects connected with bee-keeping.

'V. To superintend at South Kensington any collections that might be established there, containing examples of the best hives, the best extractors, and other articles required in scientific bee-keeping.

'Such a professor would act very much as a peripatetic lecturer, doing for bee-keeping what Mr. Buckmaster has done in promoting the knowledge of art among the artisan class in establishing schools of cookery, and latterly in promoting a scientific knowledge of agriculture. The advance that has been made in England in the knowledge of science and art during the last twenty years has been marvellous. Schools of cookery are also being established on all sides; let a similar plan be adopted with regard to bee-keeping, and satisfactory results are certain to ensue. The cost of such a Professorship need not be large. The usual salaries of the professors at South Kensington are 200*l.* per annum, in addition to allowances; and this sum, with an allowance for travelling expenses and special attendances, would secure a thoroughly competent and scientific teacher. The total cost ought not to exceed 400*l.* per annum. The German Government give grants in aid of scientific bee-keeping, and the English Government would do a great service to their countrymen by following their example.'

The following reply from Lord Spencer was read:—

'*July 26th.*

'Sir,—I am desired by Lord Spencer to acknowledge the receipt of your letter and enclosures, and to inform you that his Lordship has read the Address with great interest and will give the subject his careful consideration.—I am, sir, yours most faithfully, John R. Dasent.

'H. R. Peel, Esq.'

The Secretary added that a deputation, consisting of Rev. H. R. Peel, Mr. Cowan, and Rev. E. Bartrum, was

prepared to wait on Earl Spencer at any time that he might appoint, to give him further information.

Library.—The Secretary made a statement respecting the library to the effect that the Royal Horticultural Society had not room, and Chiswick would be too far from the London centre. The Secretary of the Society for the Prevention of Cruelty to Animals had kindly placed a part of the book-shelves at 105 Jermyn Street at their disposal.

Mr. Lyon proposed and Mr. Stevens seconded the following resolution:—'That a fund be raised to be called the Library Fund, and that subscriptions to the same be solicited; and that this fund be placed at the disposal of the Acting Committee for the time being for the purchase of books relating to bee-culture and kindred sciences.'

The Baroness offered 5*l.* to be spent on books, and General Sanders gave 1*l.* for the same purpose.

Rev. E. Bartrum offered to read at the next quarterly Conversazione a paper on the 'Stewarton Hive.'

The Baroness proposed that H.R.H. Princess Christian be requested to give away the prizes at the Annual Show of 1881.

On Thursday, the Show and the Bee Tent were visited by Lord Spencer, who appeared much interested in the articles exhibited, and in the operations of the Association. On the evening of the same day the prizes were distributed by Lady Aberdare in the large Conservatory.

The Show will be continued over the Bank Holiday, which will give an opportunity to the numerous visitors to the Royal Horticultural Gardens of having an insight into the mysteries of bee-culture.

Judges' Report in Classes 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10, and the Driving Competition.

Class 1.—The entries in this class did not in many respects comply with the conditions of the competition. The hives exhibited were not well calculated to be opened to show the conditions of the combs, the brood, and other conditions above referred to; still the Judges, taking into consideration the great risk in the transport of full stocks of bees, felt themselves justified in awarding a first and second prize, and hope that in future years, if this prize be continued, that more competition will take place, and more regard be had to the conditions on which the prize is offered.

Classes 2, 3, *and* 4.—In these classes, again, there can scarcely be said to have been any competition; and the bees exhibited, with the exception of the Ligurians, may be treated as amongst the curiosities of the show, their practical utility, or, indeed, whether they can be utilised at all in England being yet unknown, and the Judges would suggest that in future years these classes, or at least Classes 3 and 4, might be amalgamated.

Class 5 calls for no special remark.

Classes 6, 7, *and* 8 do not show any material improvement on hives exhibited in former years, except that the hives to which first prizes are awarded in Classes 7 and 8 seem to have been the subject of careful consideration in the mind of the maker, and are especially to be noticed for the reasonableness of their price.

Class 9 needs no comment.

Class 10.—The exhibits in this class were all of the same character, and the Judges had merely to consider one exhibit against the other on the score of cost.

Driving Competition.—The Judges in reporting on the driving competition consider it was done in general very successfully, the queen being captured by Mr. Walton in 3 minutes 5 seconds, and the bees being completely driven in 4 minutes 15 seconds; and Mr. Filbee, to whom the second prize was awarded, being only 38 seconds more in capturing his queen than Mr. Walton.

July 28th, 1880. J. G. Desborough.
William Carr.

Judges' Report in Classes 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22.

Considering the season, the display of honey was fairly creditable, especially comb honey.

In the Cottagers' Class we are glad to see most of the comb honey in sections; but we would suggest the prohibition of figured paper being attached to them.

It would be advantageous if there were separate classes for 1 lb. and 2 lb. sectional supers.

We are of opinion that bell-glasses should not be encouraged, as, although they have a handsome appearance, they are most inconvenient in every way.

In classes in which honey is exhibited from one apiary, it is suggested that the number of hives should be stated from which it has been collected, or that the amount to be exhibited should be clearly set forth.

We think that the exhibitors should be made to declare the *total* nett weight of each exhibit.

We are pleased to remark that there is no 'fanciful device' exhibited, as we fail to see how its encouragement can be of any service.

We venture to think that it would be a great advantage to the public if the names of the prize-winners were written on the prize-card, and also a statement for what the prize was awarded. C. Feilding.
James Noble Bower.
N. Bostock.
Wm. N. Griffin.

Report of Judges in Classes 23 to 34 inclusive, but exclusive of Class 32.

Foreign and Colonial.—Class 23.—No competitors.

Class 24.—In this class there was only one entry to which the Judges awarded an equivalent of second prize.

Class 25.—Two entries, one wholly of large sheets of very thin flat-bottomed foundation of very pale colour, the other wholly of flat-bottomed foundation, rather thicker and rather darker colour, and with wires in it to prevent sagging. A bronze medal was awarded to each.

Comestibles.—Class 26.—There were four entries No. 160 received first, and No. 158 second prize.

Miscellaneous.—*Class* 27.—There was only one competitor in this class. The collection of hives and appliances was a very numerous one, and included, besides those hives of general use in England, the Langstroth hive as sent out by Mr. A. T. Root, in the United States. Frames of this size have been so largely adopted on the other side of the Atlantic, as to afford, in great measure, the very great convenience of a general standard-sized frame; a thing much to be desired in England, though probably a smaller frame would with us be more generally acceptable.

Among other novelties displayed, was the white glazed earthenware stage and vase, brought out by the 'Renfrewshire Bee-keeper,' for giving bees either water or syrup in the open air, as advocated by Mr. A. T. Root, which supplies a perfectly cleanly material for the stage in place of the wooden one. The Dunham foundation machine and excellent comb foundation, uncapping knives, smokers, and very many other appliances, besides hives, bees, etc., etc., appear in this collection, to which the silver medal was awarded.

Class 28.—There were six exhibits in this class. The Judges had no hesitation in awarding the first prize to No. 167. This extractor is the invention of Mr. Cowan, who last year showed one that reversed the two combs on reversing the handle that turns the revolving spindle, thus saving all trouble of lifting the combs out and reinserting them for extracting from the other sides. The machine, No. 167, however, is a vast improvement upon the one exhibited last year. The effect of reversing the combs is the same, but the means by which it is done is

greatly improved. There is enclosed in the metal horizontal box that lies at right angles to the revolving spindle, and on each end of which one of the comb-cages is carried, a metal rack having sufficient longitudinal play to permit of the two cogwheels, fixed one at each end, having one half revolution to and fro, the rack coming in contact with either end of the metal box so as to arrest the revolution of the two comb-cages (which are pivoted into the two cogwheels) exactly at the right place to bring the one surface of each comb-cage to a tangent with the circle of its larger revolution; and at the same time, with reversal of the motive power to permit them to revolve freely on their central pivot one half revolution, and then to arrest them with their reverse surfaces in the aforesaid position. All the parts are easily get-at-able, and can all be taken to pieces and put together again in a few moments. The extremely ingenious mode of detaching the upper part of the revolving spindle from the arm supporting the multiplying gear permits of the instant withdrawal of the whole apparatus from the can for purposes of cleaning, &c., which is an advance over all other machines hitherto brought out. It is much to be desired that the arrangements Mr. Cowan hoped to have made last year to enable the public to obtain his machine may be carried out in connexion with this much-improved model extractor. In the other exhibits of this class the only novelty, if indeed it can be so called, was the rubber friction rollers fixed to No. 164 (to which the second prize was awarded) in place of the ordinary multiplying gear. The action is noiseless, and No. 164 was excellent, except the wooden revolving-cage, which hardly comes up to the metal in point of cleanliness. The third prize was awarded to 'The Little Wonder,' which has been long enough before the public to prove its great utility and portability.

Class 29.—There were eight exhibits, all good. No. 172 received first, No. 177 the second, No. 175 the third, and No. 177*a* the fourth prize.

Class 30.—There were a number of entries in this class, and many displayed great ingenuity, and several of them great simplicity, in make and use, thus rendering them the more valuable. The silver medal was awarded to No. 199, wire 'rakes' for fastening sheets of comb-foundation in frames in a very quick and ready manner, and at the same time preventing all possibility of sagging; and further, of inducing the bees to fix it permanently themselves as quickly as possible to the top bar—a thing they are apt to leave undone for some time when melted wax has been used to fix it. These 'rakes' are very easily and inexpensively made, and will last a lifetime. Mr. Hooker's plan for inserting sheets of foundation into a saw cut made through the length of the top bar was ingenious and useful. No. 195, an excellent and well-finished bottle and regulating feeding-stage, was commended, as was a swarm-box, No. 192. No. 197, a divisional feeder displayed great ingenuity, and is very well fitted for feeding inside the hive without interfering with the colony of bees; but its cost must preclude it from use, except in those cases where an amateur considers expense of little importance.

Class 31.—There was only one entry in this class, and a very excellent collection it was, and received the silver medal.

Class 33.—There were two exhibits in this class; in one case the Judges considered that the coverings and fastenings could not be supplied, and, as a matter of fact, are not supplied, at the prices quoted; and in the other case, the price not being attached, the Judges withheld the prize.

J. Lawson Sisson.
Charles E. Fletcher.
William H. Dunman.
Frederick H. Lemare.
F. R. Jackson, *per* J. L. Sisson.
Duncan Stewart.

THE BEE TENT AND ITS LESSONS.

I think that the enclosed letter from the Rev. Canon Kewley might, if published, prove interesting to such of your readers as are members of the Hertfordshire Bee-keepers' Association. It shows that the cottagers in this county, for whose benefit the Association was chiefly intended, are beginning to take advantage of the instruction and assistance which are now within their reach.—Herbert R. Peel, *Abbot's Hill, Hemel Hempstead, July* 20, 1880.

[copy.]

The Rectory, Baldock, July 7th, 1880.

Dear Mr. Peel,—You will remember coming over to Baldock with your expert Baldwin in the spring of 1879 to hold a meeting, and introduce the Bee-keepers' Association here. That meeting stirred up many of us who in former years had taken an interest in the management of bees to new efforts, and also to keep ourselves informed of all the new and improved methods of bee-keeping. But it did more. It excited an interest in a few who had never before thought of the matter either in the way of amusement or profit. Among those was a young tradesman, who, having attended this meeting, reported to his father afterwards what had been said and shown there. The father is aged and very infirm, and much confined to his own house and little garden. Father and son determined to become bee-keepers. Each procured a single stock, and borrowed from me one of the improved bee-hives as a pattern. This was in the beginning of the most discouraging year (1879) bee-keepers have ever known; but they were not to be discouraged by one bad season. Their two stocks swarmed. They made hives themselves, fed their bees attentively, and about a month back I went down one evening to their house, and found in their small garden no less than thirteen stocks, all strong and prosperous, as far as I could examine them, and promising a large and profitable return for their care and labour within a short time. The point of this story is, first, what a source of interest and amusement has been so provided to the infirm man. The pride and pleasure with which he showed me first one hive of bees and then another, proved evidently that bee-keeping and bee-hive-making had given him a new interest in life, and, to a great degree, made him forget his infirmities. Secondly, here was a case in which, beyond the cost of his two stocks and the small expenditure in deal and nails, quite a little property had been accumulated; for it would certainly not be too much to value the thirteen stocks in their well-made bar-hives at 20*l.*, which, with care this winter, will surely produce them a very pleasant addition to their income in the next and following years. I thought you would like to hear of this instance of success, as a proof of the usefulness of the Herts Bee-keepers' Association, and also that you might make use of it in stirring up others to avail themselves of a means of great pleasure, and at any rate of some profit, which is almost within the reach of all. I find from a visit to a well-known bee-keeper in this neighbourhood that honey in sections is producing 1*s.* 6*d.* a lb. At this rate, and with the abundant honey harvest of this season, bee-keepers should do well, and get back their heavy expenses of last year.—Believe me, very truly yours, J. Rigby Kewley.

BEE-KEEPERS' ASSOCIATION FOR ESSEX.

A Bee-keepers' Association for Essex has been formed, under the Presidency of the Earl of Rosslyn, the object being the encouragement of improved apiculture. Depôts will be established in the principal towns of the county where cottagers will be able to purchase all the newest and most approved appliances at a very cheap rate; and shows will be held and lectures delivered under the auspices of the Society at various places. The promoters

of the Society point out that there has been a great increase in bee-keeping throughout the United Kingdom during the past seven years, and that where cwts. of honey were produced ten years ago, tons are now gathered in and sent to market.—*The Times*, July 21.

BEES, HIVES, AND HONEY AT THE PRINCE CONSORT'S ASSOCIATION.

Show at Windsor.—This event came off with great *éclat* on Tuesday, the 13th ult., and was patronised by a lengthened visit from their Royal Highnesses the Duke and Duchess of Connaught, who have been guests of the Queen at the Royal Castle. Their Royal Highnesses were attended by the Hon. Rev. Gerald Wellesley (Dean of Windsor), Mr. Richardson-Gardner, M.P., Colonel the Hon. H. A. Liddell, Mr. J. Webb (Mayor of Windsor), the Rev. Canon Gee, the Rev. A. Robins, Mr. G. Cartland, Mr. C. W. Seabrook, and other gentlemen, the band of the Grenadier Guards, under Mr. Dan Godfrey, playing the National Anthem. The company included the Rev. C. O. Goodford (Provost of Eton College), Mrs. Goodford, Mrs. Richardson-Gardner, and a large number of ladies, and most of the local clergy and gentry. The weather was not Queen's weather, and her Majesty did not appear, as would have been probable under sunnier circumstances, but the show, nevertheless, was a great success. The *Windsor Gazette* gives a full account of the show as a whole, and in regard to the department under notice says:—'Two small tents were devoted to the novel and interesting exhibition promoted by the Berks and Bucks Bee-keepers' Association. In one was presented all the newest apparatus for the successful culture of bees, while the insects in glass hives might be seen carrying on their most useful and energetic labours. Pots of extracted honey, which looked beautiful, pure, and clear, were to be bought, while all the various utensils necessary to a bee-fancier were displayed and explained. The other tent was possessed by two of the Association's agents, who, without a covering, in the midst of the bees, which were swarming about and crawling all over their faces, necks, &c., showed the methods of extracting honey, captured and exhibited the queen, removed the combs from the hives, explained the best means for the promotion of apiculture, and clearly negatived the old cone straw-plaited hive in favour of the Standard wooden hives, which appear most simple, far more economical, and very easy in management. Messrs. Abbott Bros. of Southall, Middlesex, and Messrs. Neighbour and Sons, of 127 High Holborn, London, were chief among the exhibitors of bee apparatus.'

The first prize for Observatory Hives was awarded to Abbott Brothers of Southall, for a handsome hive of polished mahogany and plate glass, fitted with new combs built on wooden foundation by the descendants of one of the queens imported from Cyprus in May last, which, with her, were particularly admired for their extreme beauty. This hive is peculiar from the fact that, except at the entrance-hole, there is no possible place in it where a single bee can hide from view, though it contained six combs of Woodbury size. The first prize for Observatories in the local classes was taken by G. P. Cartland, Esq., with one of Abbott's hives of last year, of which the Judges at South Kensington gave so excellent a report. All its walls and its top were of glass, in which bees are supposed not to prosper; but in this hive, under the careful management of its owner, a swarm of this year had thriven amazingly, filling it from end to end, and rendering it so heavy and crowded that on arrival it was deemed advisable to remove a part of the contents to give room for observation in a more general sense. Their Royal Highnesses and party paid considerable attention to this part of the show, and listened with evident interest to Mr. Cartland's explanation of his exhibit, and needed reminding of other engagements ere leaving it. Messrs. Neighbour and Sons exhibited an Observatory containing two frames of comb-foundation, to which some of the Cheshire 'rakes' or 'fixers' had been attached; but so inexpertly had this been done that they were tumbling and 'sagging' in very improper directions. It will be just to say that this was not from any fault in the 'fixers,' but through their having been misapplied. The foundation used was the thin American flat-bottomed with wires, which, when properly suspended, does not need other support. The honey classes were exceedingly well filled, the exhibits of Messrs. Harris, Carter, Filbee, and Warren, being especially attractive.

The following are the awards in the various classes:—*Open to Members of the Berks and Bucks Bee-keepers' Association.—Hives.*—Class I.—For the best Observatory Hive.—First, 1*l.*, G. P. Cartland, Windsor. Class II.—For the best moveable comb-hive, price not to exceed 10*s.*—First, 15*s.*, G. Howard, Eton Wick.

Honey.—Class III.—For the best display of comb-honey in sections.—First, silver medal, and 10*s.*, Leonard Harris, Bradenham; second, 7*s.* 6*d.*, Jonathan Filbee, Naphill; third, 5*s.*, W. E. Warren, Isleworth. Class IV.—For the best exhibition of comb-honey in supers.—First, bronze medal and 10*s.*, W. Carter, Maidenhead; second, 5*s.*, Rev. S. R. Wilkinson, Great Marlow; third, 2*s.* 6*d.*, Jonathan Naphill. Class V.—For the largest and best exhibition of run or extracted honey.—First, certificate and 10*s.*, W. Carter, Maidenhead.

Open to all England.—Class VI.—For the best Observatory Hive.—First, 1*l.*, Abbott Bros., Southall; second, 10*s.*, G. Neighbour, Regent Street, London; third, W. Martin, Great Marlow. Class VII.—For the best moveable comb-hive for general use, price to be taken into consideration.—First 1*l.*, J. A. Abbott, Southall; second, 10*s.*, G. Neighbour and Son. Commended, S. J. Baldwin, Upper Norwood. Class VIII.—For the best moveable comb-hive for cottagers' use, price not to exceed 10*s.*—First, 1*l.*, S. J. Baldwin; second, Neighbour and Son. Class IX.—For the best and most complete collection of hives and bee-furniture.—First, 1*l.*, Neighbour and Son. Class X.—For the best display of comb-honey in sections.—First, 10*s.*, W. E. Warren, Isleworth. Class XI.—For the best exhibition of comb-honey.—First, 10*s.*, W. Carter, Maidenhead; second, 5*s.*, T. Knowles, Windsor. Class XII.—For the largest and best exhibition of run or extracted honey.—First, 7*s.* 6*d.*, R. Scott, Blindley Heath Apiary, Godstone. Class XIII.—*Driving Competition.*—First, 1*l.*, Martin, 4½ mins.; second, 10*s.*, T. B. Blow, 4½ mins.; equal thirds, J. Filbee, 6 mins., and J. A. Abbott, 5 mins.

The Berks and Bucks Association may congratulate themselves on a perfect success which augurs well for the future. The arrangements were admirable, and reflect great credit on the indefatigable local Hon. Sec., to whom we feel personally indebted for having so well borne out the opinion of the Judges on our Kensington exhibit of 1879 (p. 97, Vol. VII., *B. B. J.*)

WISBECH BEE-KEEPERS' ASSOCIATION.

An Exhibition of bees and bee-furniture will take place at the Working-men's Annual Show and Fête, on Monday, August 2nd, 1880, in the grounds of Harecroft House. Messrs J. G. Desborough, of Stamford, and R. R. Godfrey, of Grantham (hon. sec. of the Lincolnshire Bee Association), members of the British Bee-keepers' Association will attend to lecture and manipulate the bees, driving them from one hive to the other, capturing the queen and exhibiting her. The most improved and modern appliances in apiarian science will be shown, and the exhibition is intended to be of a highly interesting and useful character. The bee operations will be conducted with perfect safety to the spectators. Prizes will be offered for the best filled super of any description;

for the best piece of honey in the comb; for the best glass or jar of run honey; for the best specimen of bees'-wax; and for the best collection of bee-furniture. Application for entries (free of charge) to be made to Mr. A. Bothamley, Market Place.

BEES AT LONG SUTTON.

I have been urged by Mr. Godfrey to write you an account of our doings here since the visit of the Bee-Tent in October last.

At the visit of the Lincolnshire Association I purchased a stock of bees, which were transferred into a frame-hive in the tent. They were well fed in accordance with the instructions then given, and the stock wintered well. This spring they were again fed, and on the 10th of June threw off my first swarm. They were put into a hive containing ten of Abbott's Standard Frames, but were allowed access to only five of them. These, assisted by a little feeding at night and on wet days, they filled in ten days. I then put on a super, in which after a day or two they commenced working.

My second swarm came off on the 20th of June, and were hived in like manner. This swarm was nearly as large as the first, and for ten days did well; but on the 4th of July I had occasion to examine the hive, and having removed about 6 lbs. of honey, I failed to find the queen, and renewing my search I found neither queen nor brood, so I gave them a frame of brood from the first swarm, and on opening the hive on the 9th I found six queen-cells.

This deprivation, and the wet weather we have experienced, have caused the bees to forsake the supers; but as the limes are coming on I do not despair.

On the 30th of June I deprived the original stock of 12 lbs. of extracted honey; so that altogether, if I get nothing more from it, I cannot complain on the returns of my investments.

My friend (Mr. C. Clarke), induced by what he saw at the show, also commenced bee-keeping in October by purchasing two skeps about a week after the show. On examination we found one a very fair stock, but the other very light—probably a late swarm. We decided that it would be too expensive to feed up, and joined it to the first. This wintered well, and gave the earliest swarm in this neighbourhood about the 20th of May, and about nine days after a second. These were hived in frame-hives; and twenty-one days after the first swarm we drove the bees out of the skep, giving part of the bees to the second swarm, which was weak, placing the remainder in a frame-hive, giving them one frame of brood from the first swarm, as we were not sure of the queen being present (being only novices). They have raised a queen, and are doing well. The comb was very old, and was not transferred.

In company with this gentleman I have personally visited nearly every bee-keeper within six miles (perhaps I ought rather to call them bee-stand proprietors). Many stands are empty; still more have lost half, and some three out of five, feeding—that is real feeding—being almost unknown, the elder-scoop being the usual weapon of destruction. One woman informed us that she fed her bees well. On inquiry we found the following was her idea of good feeding:—Having made a round of dry toast, soak it well with rum, and cover it with coarse sugar. What a delectable feast!

And now a word of warning to those gentlemen who accompany such exhibitions as were given here. The following will tell its own tale:—On the evening of the 11th we visited a man who had been supplied by the Association with two frame-hives in return for the use of his bees. We found several very good stocks in skeps full of honey, and bees hanging out idle. Under these we placed some cheese-boxes with a hole in the lids, as nadirs. On asking about the frame-hive, and seeing it empty, he told us that the bees there soon died, although they were fed. On lifting the top we found that, true enough, an attempt had been made to feed them by a bottle-feeder, but the contents of the bottle had crystallized so that the bees had starved, though within reach of apparent plenty. Asking how the food was prepared, he replied, 'As I was told—by *boiling* sugar and water.' Now I do hope that those gentlemen who so kindly visit our local shows, and give so generously their instructions, will give no more such meagre instructions as to BOIL sugar and water; it will most surely crystallize either in the bottle or cell, and thus bring the improved system into undeserved disrepute. Would it not be better in all such cases to accompany the gift or sale of hive by one of the Editor's *Leaflets on Feeding?*

By the visit of the Association here, and I must add by our personal visit to each bee-keeper, an interest has been aroused on the subject, and I feel sure that I shall be able to report improvement next year, and also an increased number of frame-hivists.—J. W. MEASURES, M.R.C.S.E., *Long Sutton, July 13th*, 1880.

BRITISH BEE-KEEPERS' ASSOCIATION'S HANDBOOK FOR COTTAGERS.

Ere this appears before our readers, the British Bee-keepers' Association will have published its promised Handbook of Modern Bee-keeping for the use of the Cottagers. The work is the joint production of Mr. F. Cheshire and the late Mr. John Hunter, and having the approval of the committee as a body, its contents may be relied on as eminently practical and useful. It contains many excellent illustrations, and has the rare merit of explaining the uses of modern appliances without giving prominence to the wares of any special maker. Further particulars will be found in advertisement.

TAYLOR'S BEE-KEEPERS' MANUAL (New Edition).—We have been favoured with a cutting from the *Examiner* of July 24, 1880, as follows:—

'The demand that has grown up for information on apiculture has induced Messrs. Groombridge to bring out a new and seventh edition of the *Bee-keeper's Manual*, written by the late Mr. Henry Taylor, which has been produced under the care of Mr. Alfred Watts. That there is plenty of matter in the book we need not deny; while at the same time we are bound to notice the pointed omission of all reference to the British Bee-keepers' Association, to the *British Bee Journal*, or to the labours of the Rev. Herbert Peel and of Mr. Abbott, who have done more than all the Englishmen named in the book put together to popularise scientific bee-farming in England. It is time Mr. Abbott brought out a really complete manual of apiculture compiled from his unrivalled personal experience, and from the rich stores accumulated, if we may be allowed the expression, in the comb of the *Bee Journal*.'

We sincerely thank the *Examiner* for its very kindly mention of our efforts in conjunction with those of the B.B.K.A. and its able Hon. Sec., the Rev. H. R. Peel, in behalf of apiculture. We have not seen the new book alluded to, and cannot therefore offer an opinion on its merits; but as Editor of a journal devoted to bee-culture, and in a sense the guardian of its interests, we think it should be known that up to 1879 Mr. Watts '*never handled a bee, nor kept a hive in his life.*' We were, in 1879, in correspondence with Mr. Watts respecting the book in question, but withdrew from the negotiation on his making us aware of the fact we have italicised; and this may afford a partial clue to the 'pointed omission' the *Examiner* has discovered, but why the B. B. K. A. is left out in the cold we cannot surmise.

Correspondence.

*** *These columns are open to Subscribers, so that their queries, replies, correspondence, and experiences, may be* fully *and* faithfully *recorded; and for the discussion of all theories and systems in Bee-culture, and of the relative merits of all hives and appurtenances, that the truth regarding them may be ascertained. The Editor, therefore, must not be expected to coincide with all the views expressed by the various writers. All Correspondence is addressed to the Editor.*

THE CHESHIRE RAKES.

At the Tiverton Bee Show (Devon and Exeter Society) I noticed our ingenious friend, Mr. Cheshire's mode of securing foundation, and it immediately occurred to me that the wire 'rakes' might be simplified and cheapened, thus: Strips of tinplate, tolerably stout in consistency, are to be cut in excess of the depth of the frame to allow of bending over the top and bottom bar. I then snip one side in four places (as per figure), and bend them down at right angles. The enclosed 'cut' will better illustrate the mode. I then simply place the foundation sheet on the points and press down. By this plan about three dozen strips may be obtained for the price of one sheet of tin-plate, viz. 4*d.*, a contrast to 1*d.* per rack when made of wires with the wire pins soldered to them. Six 'snips' are (perhaps) better than four, and five strips are enough to a frame. (Proved!)

A splendid season! Bee-keeping, as a science, will now undoubtedly 'hold its own.' Sectional supers are the right thing, and the next best are the Scotch Octagons, as shown at the first Crystal Palace Exhibition, but no more monster hundred-pounders shall be worked in the apiary of yours—Geo. Fox, *Fore Street Hill, Kingsbridge.*

[Our esteemed correspondent will, we are assured, permit us to say that a very similar idea to the foregoing was mentioned by Mr. Hoge, of 115 Cannon Street, when Mr. Cheshire exhibited his 'fixers' to Mr. Jones, of Canada. The fact in no way detracts from the originality of Mr. Fox's suggestion, and is only mentioned as an instance wherein two minds at first sight of an invention have entertained the same idea of improving it.—Ed.]

WOOD FOUNDATION.

When last at your place you kindly gave me a sheet of wooden foundation for experimental purposes. I think it only right to inform you that it has succeeded perfectly, and is now one mass of brood. In future I shall only use the wooden foundation, and I can see no reason why it should not winter as well as the ordinary frames. I trust the Cyprian cell idea will be carried out extensively. I shall certainly adopt it when opportunity offers.—Henry J. Wilcox, *Frithsden, Berkhamstead.*

WOOD FOUNDATION.

I received the hive safely a week ago, and had it painted at once, stocked it with a large swarm on the 24th inst., and to-day (the 29th) on examination found it already with a large number of eggs, and a quantity of honey and pollen. The comb foundation has answered my highest expectation, and eight of the ten frames are already in use almost throughout.—C. W. Brooks, *Manningtree, Essex, June 29th,* 1880.

WHITE-EYED DRONES.

Last year I sent you some white-eyed drones, you were kind enough to give an opinion; but as they have appeared again this year I venture to trouble you with a few specimens. I think I told you they seemed blind, now I have no hesitation in saying they are so, for they seldom, if ever, get directly to the hive entrance, and are to be found lying about the ground all over the garden. They fly against the hives, trees, and walls, or whatever comes in their way. If there needs more evidence of the blindness of these insects, I dare say I could get it from the person who owns the bees. This is the third season they have appeared. I trust I may make your acquaintance during the show next month; and meanwhile, if you will favour me with a line, I shall be glad, for I am very much interested in the cause of white-eyed drones appearing in this hive year after year.—*Hardriding, Northumberland.*

[The drones came safely, and are in a bottle with spirits; and we shall be glad to send specimens to any one who will undertake to examine microscopically, and report upon them.—Ed.]

BEES AND THE FLY-CATCHER.

I think it was about two years ago I saw in your *Journal* a letter from a bee-keeper recommending the destruction of all fly-catchers and their nests. I must say I was a little bit dismayed, for, being a bee-keeper, and I might almost say a fly-catcher-keeper as well, I began to think, if your correspondent were correct, how bees and birds could get on together. How I loved to see my pets, who had made their nest in a pear-tree at one end of my lawn, flying in and out with that elegance so characteristic of this beautiful bird, alighting now on one croquet hoop, then on another. Nor would they leave the lawn even while a game was going on; they were always to be found either on the garden-roller handle, on the hoops or pegs, or in their nest. Now I ask you, Mr. Editor, would you have signed the death-warrant of these interesting little birds without making yourself fully convinced of their mischief? Well, *I* thought so, and I am so glad to think I put them to the test. I drove a stick into the ground about four yards from their nest, and only one yard from a very favourite perch of theirs, on the top of which I nailed a piece of wood, and placed upon it a large piece of comb filled with sugar-syrup. The bees, as you may imagine, frequented this spot in hundreds. I took up my station at the opposite end of the lawn and watched the result, opera-glass in hand, for fully an hour, without even seeing them even try to catch a bee. They took in that time hundreds of flies, bearing them, when they had partially filled their beaks, to

their brood in the nest, then about a fortnight old. I should like to know if this has been the experience of other bee-keepers. That the locality in which they were situated might have been favourable in providing a fly of which they were particularly fond, and that in the event of the fly not having been there they would have taken the bees, might perhaps be urged by some, though I am inclined very much to doubt the probability. The sting of a bee in the craw of a bird would be anything but pleasant to the latter, even though swallowed many minutes after the death of the bee. In all these things we want men of greater observation, for why try to extirpate a lovely little bird like our common English fly-catcher, when it might be, *and probably is*, as harmless to our bees 'as the sigh of a butterfly in love?'—A. E. Booker-Hill, *Whissonsett, Norfolk.*

[The letter mentioned was from a bee-keeper, written and inserted in good faith, and without prejudice on our part. It is probable, as is now suggested, that at certain times there are insects abroad that are more attractive to the fly-catcher than are bees; but that does not prove them to be innocent of bee-icide at other seasons. The tom-tit is a terrible turk in the winter months, but is careful to avoid danger from the sting by picking it out with his beak and laying it on his perch for the time being; but at other seasons he does not come near a hive. We are too fully impressed with the value of small birds to wish to see them destroyed, and would much prefer to see them guarded against than massacred, and thank our correspondent for giving us the opportunity of saying so. —Ed.]

QUEENS DYING.

A queen received on 1st June died about a week after being united to a common swarm. There was a white hard substance found in the abdomen. I found the same last year in a young queen, which died after commencing to lay. Can any one give a reason for this?—D. S. Larbert.

WATER FOR BEES.

'The Renfrewshire Bee-keeper's' 'too beautiful' an apparatus for the above purpose, must be meant for Windsor, Osborne, Blenheim, or such-like places, not for general use. I use a common flower-pot shallow, filled with well-washed tea-leaves; on these the bees alight with safety, and suck up the water in which they float. The shallows often require refilling; in doing so, pour the water gently down on the inside of the shallow that the tea-leaves may float, and the bees not be drowned, as they would be if the water were poured upon them. —F. H. Lemare, *Sydney Terrace, Guildford.*

WATER FOR BEES.—SWARMING FREAK.

I find that sheets of your very yellow foundation laid flat on the garden walk—in the shade, and occasionally sprinkled with water—make a very attractive source of water supply for the bees. I put it out to bleach a little. I intend in spring to try whether shallow trays of this wax-foundation, made by just bending up the sides and pinching at the corners, will not be attractive with a little pea-flour for artificial pollen and others by the side with sprinkled water; perhaps a very little moss on the former would be an improvement.

A fine swarm yesterday was nicely hived and transferred to a box, where it remains. Another swarm, half-an-hour afterwards, went into the stock from which that swarm issued, and are quickly finishing sectional supers which otherwise would not have been resumed. Nothing remarkable, perhaps, but this has not occurred before in my experience.—George Fox, *July 8th*, 1880.

HONEY SLINGING.

The honey harvest in this part is now at its height. Following the valuable directions given in the July Number of the *Journal*, I sling just when the comb is about to be sealed up. I have extracted a large amount from the frames. Your slinger works well. The people in these parts are astonished at it, and every evening—for I think nearly every day—I am surrounded by several willing helpers, who come to lend a hand, and see how the work is done. The hives which have not swarmed have done remarkably well; but when they have swarmed I succeed in getting very little honey from them.—G. W., *Coldham, July 5th*, 1880.

BEES IN AUCKLAND, NEW ZEALAND.

In reference to Mr. Chaplin's note in March number, as far as I can ascertain (and I have made many inquiries) Ligurians have not been introduced here at present. I have not yet come across any bee-keeper using frame-hives, but all of them keep (I cannot say work) plain boxes with flat or slightly sloping roofs. I have heard of two apiaries with modern hives, but they are about 200 miles away, quite out of my district.

While writing you, a word of advice to Mr. C., and any others that think of 'swarming' over here may not be out of place; and that is, 'Don't come unless you have a place already prepared for you, or have money sufficient to keep you without work for a few months; or unless you are prepared to buy, or take up land, and get it into cultivation; as business here is very quiet indeed, and no sign of it improving at present. When it does there will be work, and good wages for all here; but I am sadly afraid that next Christmas will not see business in full swing again. I personally know many that have been in the colony for periods varying from two to six months who have not even yet obtained permanent situations, and have only been able to do an odd day's work occasionally, and yet they are good, able, and willing men.'—James J. Potter, *May 20th*, 1880.

SWARMING EXTRAORDINARY.

A Lady Bee-keeper thinks our readers may be interested in what she hopes is an unusual occurrence among bees. She writes:—'I had five stocks in April, one weak, four strong in bees, and drones out on the 22nd. Honey seemed plentiful, and although I put large glasses on each stock, of

which they took possession, swarms came out about the middle of May. About 9.30 a.m. two stocks sent out large swarms, which united and clustered high up in an oak-tree, round the bare stem of a branch about as large round as a man's arm. Just as they appeared knitted enough to take, a third stock sent out a swarm, which joined them; and this was repeated by a fourth swarm! Thus each of my four first swarms had formed one immense mass, and the small stem became as large as that of an immense tree! My man made a platform in the tree beneath them, of a door, &c. Of course I had no box that could hold them; but at the second attempt, he filled my largest, and set it on the platform, with a second adjoining it, all covered with bees as well as the platform, which looked covered with a thick brown carpet. Suddenly they rushed out of the boxes, and away, my butler and another following. They ran for nearly a mile, the bees sometimes high in the air, sometimes a cloud round them; at last they settled near the ground. Boxes were sent for, and I heard no more till dusk, when the men came back much stung, with my large box full of bees inside and out, and the wheelbarrow in which they had placed it, also covered with them. I got them to carry the full box to a dark room, charging that all perforated zinc tops and bottoms of boxes should be uncovered. Those in the wheelbarrow I had swept off into another box, and set by the first. I resolved to write you for advice next morning, on plea of being one of the first subscribers to your invaluable paper, and I went to rest, rejoicing in my strong colony, but, alas! when morning came, the bees in the large box were suffocated! those swept from the open wheelbarrow, alone were left alive which, being queenless, rushed back to the old stock; and so I lost my four first fine swarms. Three casts have issued since; I have taken some eighty or ninety pounds of honey in supers from the old stocks, and have much more to take, but cannot quite get over the loss of four such swarms. I hope no other lover of bees has had so sad an experience.'—*Henfield, Sussex.*

REMEDY FOR STINGS.

I have lately had much need to make use of antidotes to bee-stings, and have found two very effectual—the leaves of the plant called Saponaria, (it seems, from 'Withering,' a variety of the *S. officinalis*). My plant has a double cream-coloured flower. It grows plentifully when once planted. In using, it merely requires to be moistened on the upper part and applied, and in a few minutes removes the pain of a burn or scald, or sting of a wasp or bee, and several other ailments. Another antidote, which I have not seen quoted in your *Journal*, is the simple remedy of applying honey, which I have also found very helpful.—G. R., *Diss.*

THOMAS WILDMAN.

The latest addition I have made to my stock of bee literature is a copy of the *London Chronicle* of December, 1781, containing the following notice of the death of this celebrated bee-master, which must be interesting to many others as well as myself. —J. G. Desborough, 12 *St. Peter's Hill, Stamford.*

'The *London Chronicle*, from Saturday, December 15, to Tuesday, December 18, 1781. Vol. L. No. 3908.—Lately died at the seat of Sir Martin Folkes, of Hillington, in Norfolk, Bart., Mr. Thomas Wildman, celebrated for the method of managing bees.'

[It would be interesting to many to learn more of the doings of Wildman at Norfolk; can any of our readers furnish any information thereon?—Ed.]

STING POISON AN ALKALI?

I have written to you before about bee-stings. Having a very thin skin, I suffer much, and after a few hours have great swelling. I have tried everything in vain. Dr. Pine's, and all alkali dressings were of no avail. I was driving bees in Ireland, and my veil came off, and I had a swarm of bees on my head; I swept them off as well as I could, and ran away, being stung in about thirty places. The people pulled out the stings, and I kept washing my head with vinegar. I had no swelling, and little or no irritation. I am perfectly satisfied the poison is an alkali, instead of an acid, as all the bee world have hitherto concluded.—T. B. Brown, *Harleton, July 23rd.*

CRITICISM ON OUR WIDE-ENDED FRAMES.

I have a bone to pick with you.—Some years ago the Woodbury Hives were all that was bad, because the frames were propolised in the receptacles made for them. A few years later you introduce a frame with a projecting piece which virtually makes the propolising surface as large as in the Woodbury; and now, as far as I understand, you go a step further, and prefer making the whole side of one frame to rest against the next frame; the propolising surface therefore being the whole depth of the frames. I pity the poor novice who adopts the plan, and finds the whole of his moveable bar-frame hive one immoveable mass; and who, after wrenching it apart, squeezes half the bees in attempting to put it together again, and is himself stung to death by the remainder. I should advise your calling it 'The patent suicidal slaughter-house and immoveable bar-frame hive, warranted to kill bees and owner.'—S. Nicholl, *Cowbridge.*

[We are simply delighted with this straightforward criticism, because there is no possibility of misunderstanding it; at the same time we demur to it as being based on incorrect premisses. When objecting to the notches and racks in the original Woodbury, p. 52, Vol. I., 1873, we wrote:—'The notches in the rabbets and bottom rack we have always denounced as most objectionable features in the Woodbury arrangement, and cannot consider any hive perfect which contains them, or any modification of them. In addition to the danger of crushing bees when replacing the frames of comb after manipulation and examination, often causing the death of valuable queens, there is the still more awkward fact connected with them, that the frames cannot be moved in a *lateral* direction in the slightest degree until they have been prised out of the notches;

and in doing this it often happens that the bottom corners (of the frames) are forced against the inner front or back of the hive, to the great danger of the bees passing round them;' and there is not a word that we can discover that points to propolising as an objection in the sense our correspondent implies. Our indictment against the notches and racks was based on the fact stated above, viz., that when in them the frames could not be moved laterally without first raising them up, and possibly damaging the combs in them. Nor did we wait 'for a few years' before introducing wide-ended frames, for on p. 70 of the same Vol. (1873) we gave a sketch of them, and on p. 99 a more detailed engraving of them, with a description of the means by which the much-desired lateral movement could be obtained. Propolising is undoubtedly a very great nuisance; but its presence in a hive is more often the consequence of bad workmanship in the hive's construction, or carelessness in re-arranging its parts, than from any love of the bees for its use. Not a word that our correspondent advances so trenchantly against our proposed frame-ends touching each other has less force in respect of the highly-valued sectional supers now in general use, both here and abroad; yet no one, after years of experience, has aught to say in their dispraise, though many of them are so constructed that they *touch all round*. What a bug-bear propolisation is! We have italicised the last three words of the former sentence, because in them lies the charm that exorcises the ghastly spirit of propolis that would frighten the bee-world out of all idea of improvement. It is well understood that bees propolise all cracks and fissures in both hive and super; and we have seen many samples of both, through which the wind could whistle as readily as through a wattled hurdle, and they have been plastered with propolis as such hurdles are with mud. But in respect to wide-ended frames as of sections proper, we have, in our mind, those that closely 'touch all round,' leaving no crack or crevice for the bees to daub, as a protest against the manufacturer. The evils prognosticated are happily confined to the imagination of our correspondent. He has never tried the hive or frame to which he has alluded, if he had his opinion and judgment would be entitled to more earnest consideration. *We* have tried both, and our experience has led us to dare the chances of adverse criticism, though fully alive to its probability. We sincerely thank our correspondent for going so straight to the root of his objection to what in our mind will effect an immense improvement in hives in which the comfort of the bees is to be taken into account. It is not a new thought; we gave it practical utterance at the Alexandra Palace Show in 1876; but it met with no response, and we have ever since been urging the necessity for a means of preventing the escape of heat from the brood-nest between the ends of the frames. The principle is closely allied to the 'Giotto,' commonly in use in Italy, and it has now the sanction of America, as is proved by the pattern hives sent here by Mr. Nellis of Carajoherie; and we venture to assert that it will one day be generally adopted.—Ed.]

AN AGED STOCK.—COMBS ACROSS THE ENTRANCE.—EXCLUDER ZINC.—FOUNDATION 'FIXERS.'

We have had a pretty good season for bees in this quarter up to this time. The weather is rather unsettled now, however, so that storing is not going on so fast as it was a week or ten days ago. The white clover is just at its best, and the loss by every wet day is considerable. The electrical conditions of the weather, necessary to the secretion of nectar in the flowers, are, however, continuing, so that we have a prospect of getting a few supers filled this season.

About a fortnight ago, by the kind invitation of the proprietor, I paid a visit to the 'Aged Stock,' so well described by 'N.' in No. 78, Vol. VII., page 128, of this *Journal*. This stock, notwithstanding its age, is in a most thriving condition. It has thrown two large swarms this year, and the population is still numerous. Assisted by my friend 'N.' I cut out a lot of the old comb, and filled up the space with sections.

Enclosed please find a specimen of, I have no doubt, the oldest of the comb, supposed to have been built about a quarter of a century ago. This stock is wholly in a natural state, just the same as we would find bees in a hole in the rocks, or in the decayed bole of an old tree. It is therefore interesting to find that apparently they have always been storing their surplus honey at the back, that is, at the point farthest from the entrance. Nearly all the comb at the back was honey-comb, while their brood-comb was at the front and sides, and right up to the roof, as you will observe from the piece enclosed, one end of which was attached to the roof. Then their entrance is a hole cut through the stone wall, just under the eaves of a two-storied house. There is no flight-board, nor no necessity for it, for the bees pop in and out at their hole much more naturally than they do in a hive with modern front fixtures. If one more heavily-laden, than the rest falls a foot short, it gets a hold of the rough wall, and climbs up to the entrance.

I can testify to your excluder-zinc being the right thing to prevent a queen passing through into supers, or for confining a queen to any part of the hive one wishes, while it is no hindrance to the bees in whatever position in the hive it is put. In doubling stocks for extracting, a sheet of it placed between the upper and lower box keeps the queen confined to the lower box. In side or back storing it is invaluable to keep the sections clean and free of brood; and as dividers for sections it is superior to either wood, glass, or tin, for the bees have free communication from one section to another in every part, and the necessary temperature passing freely through all the set enables the bees to cluster better and build comb faster than where they are cut off from each other by a thickness of tin, wood, or glass. As a means of preventing swarming it is of no use whatever. The bees build queen-cells, swarm out at their appointed time, leaving the poor queen in the hive vainly endeavouring to push herself through the excluder zinc. True the swarm returns again after a little time, just to again issue in an hour or two or next day if the weather is right. If left alone, this state of matters goes on for a week or ten days, till the young queens are hatched. If there is one of them puny enough to pass through the zinc, the swarm clusters, and does not return. During all this time the bees are doing nothing but swarming, and if matters are left thus they may go on swarming and returning through the best of the honey season, and a fine stock gives little surplus.

My experience of it as a means of preventing swarming is, as I have described, so that it is not only useless, but if left in the hive to confine and prevent swarming it is positively injurious. It strikes me swarming cannot be absolutely prevented till the nature and instinct of the bee are changed.

I am very much surprised at the difficulty you bee-keepers in the South have with comb-foundation. To us in this quarter, who regularly use it with the greatest success, and who never have a broken-down sheet or a bulged or sagged comb, it is a matter of wonder and amusement to read in your own and contemporary journals the schemes and devices proposed to prevent sagging and breaking down.

Fine wire, silk linen and cotton threads, sheets of wood, small iron rakes, ladies' hair, appear to us to be all unnecessary, and only increase the cost without any corresponding advantage. I am glad the ladies' hair plan has been abandoned. Fancy the idea of a few bee-keepers going along the street, examining with the critical eye of

a connoisseur the heads of the passing ladies, and speculating on whether the fair ringlets of this *blonde*, the dark tresses of that *brunette*, or the silvery locks of your stately matron, were longest and strongest for their purpose. Seeing that anything that is put in a sheet of foundation besides wax is to a certain extent an obstruction to the bees, and also extra expense to the bee-keeper, do you not think that all these deviees complicate matters?

Would it not be more advantageous to show bee-keepers the method of making the most of what is perfect as it is? It is all very well for experimentalists (and I give them full credit for their good intentions), who have plenty of time on their hands to devise ingenious methods of doing things, but all those things that require time and patience are a nuisance to the ordinary bee-keeper. Simply because the bulk of bee-keepers in this country have neither the time nor the means for such fussing. Raitt's foundation this year leaves nothing to be desired. If properly attached to the frames with melted wax from an Abbott's smelter, no sheet ever breaks down, every cell is built out perfect, and every comb is as true as if cast in a mould.

Now what more would one wish? Only the combs built out and finished. It appears to me an enterprising bee-keeper might start a trade in finished combs. He might be able, if the frames and comb-foundation were sent him, to supply them at about 6*d.* a frame, which is about the cost of the Cheshire rakes, and no bother at all except putting them in the hive, and getting the bees in.—J. S., *Arbroath, July 10th*, 1880.

[The piece of comb shows plainly that it has been bred in up to the roof, proving beyond a shadow of doubt that bees do not preferentially store their honey above their brood. In the description of the hive, p. 128, Vol. VII., the removal of the back revealed a surface of comb 'two feet square,' so that there was ample space for the bees to exhibit their propensities.—Ed.]

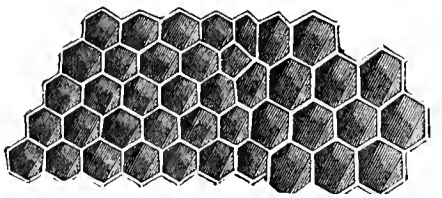
BEE-KEEPING DISAPPOINTMENTS.

Yes, Mr. Editor, it's a charming pursuit is bee-keeping, and a most money-making thing, 'oo; the honey that you get cost you just about its weight in silver; and as for gold being got out of the wax, as one of your correspondents asserts, I should think that is not so improbable, considering the large amount that has gone into it. Now I'll tell you how I got on with bees. In 1877 a friend gave me a hive of Ligurians. They were in an old cheese-box, and he did not expect to see a swarm from them that year. But they did swarm, and I put it into a box-hive with frames, &c., to the size and pattern he gave me; but whether Woodbury, or what the name be, I know not. I sent both hives up to the heather in that year, but it broke down the combs in the frame-hive. And, as I thought, the other wanted feeding, I lifted up the edge of the cheese-box and put a bird fountain-feeder underneath. The consequence was there were soon as many wasps as bees in the box, and after a little it was all wasps and no bees, for they had just died out. So I put it away. Last year my one swarm gave me six new ones, seven in all: I had fed hard all the winter; and they had plenty of food, which I suppose accounted for some 40 lbs. or so of white loaf-sugar. Last year the seventh hive came off on the 27th August. I got some fountain-feeders and a cask of two cwt. of sugar, and gave it them. This year I found two hives dead, but the last of all alive and well. I continued feeding, and found they had stores of honey left. One hive that died had none, but another that also died had plenty. I took a little honey last year, but it was not honey only, sugar and water quite devoid of flavour and taste, rubbish and slops. I found some big cells in one comb fully a quarter of an inch across, and with a greenish tinge on them. Thinking they might be moth-cells I cut them out, they looked like little volcanoes. What are they? Yesterday I had another look at the strongest hive, and found a lot of queer cells like brownish thimbles stuck among the others: what are they? for neither in *Hunter* nor *Pettigrew* do I see any mention of them. Are they drone-cells? There were probably a dozen on one side of the comb, and half-a-dozen on the other, comical, rough-looking, something like velvet on the outside. One had a clear top like a bit of glass let into it. How am I to tell breeding-cells? I find some closed with white wax, and some with yellow or brownish wax. Which is which? And what are pollen cells? Also I notice in all books that you are to be sure and catch the queen as the first point of doing anything in the swarming way; but that's just nonsense. How are you to do it? There is a game I used to know in my youth called 'Catch the ten,' the ten being the winning card, and very difficult it was to catch. But that's simplicity itself to 'catching the queen.' I never even saw the queen but once, and that was in the August time when there were very few bees. I fancied I saw her once in another hive, but in a moment she, if it was she, was lost. Catch her, indeed! You must find her first, and that I have entirely failed to do.

Then again, what is a queen-cell like? No book gives it. *Hunter* gives a cut of some little circular cells, but there are plenty of them at the bottom of all the combs; are those the queen-cells? And what is the meaning of 'ripe?' What is it like when it is 'ripe?' No information. Also, when, at what time of year ought supers be put on? and when, at what time of year, should the frames be taken way? and if they are full of young bees, what is to be done with them? For it is a pity to take a lot of frames away and find you have only got a lot of young bees instead of honey. Oh, yes; it's a charming amusement, and so cheap. My housekeeper grumbled woefully when I used up all that sugar; and no wonder. How much jam would it not have made, and ever so much better and nicer than the rubbish we are now eating! And if I take a frame off and put it into one of those whirling things, won't the young bees fly out along with the honey and make the whole thing a mess of pollen, bees, and a little real honey to glue it together? I have a carpenter here who makes my bee-boxes, and who has kept bees all his life; but he says he has never seen a queen-cell. When I can find out which they are, how would it do to take a comb with some on, put it and another comb or two into a fresh box-hive, and set it on the old stand, and move the old hive away, so that the bees flying about, and those that might leave the old hive, would go to the new one, and so make a colony? Plenty would come back to the old stand. But how to catch the queen? That's the rub: first, however, to see her. Also, can you, or any of your correspondents, tell me any way of arranging the bottom glass of conservatories and hot-houses, so as to allow the bees to escape? I find that they come in hundreds into my hot-houses, and perish against the glass at the angle that it makes with the wooden ledge it rests upon. Could the glass be contrived to lift up and let them out, for sometimes they are quite a nuisance, besides their being killed in hundreds?—J. R. Haig, *Blairhill, Perthshire.*

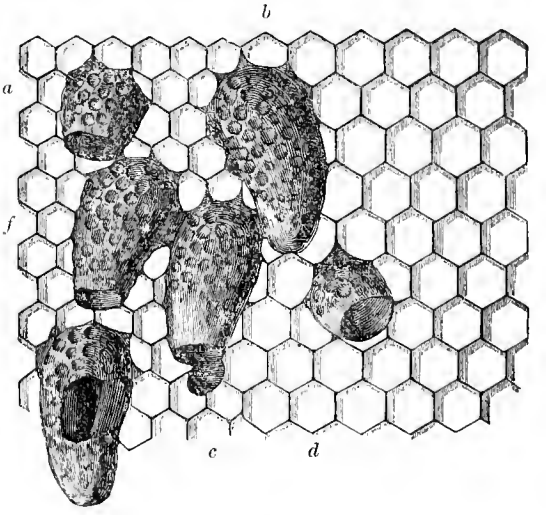
[We are scarcely surprised at your ill success with bees, seeing that you confess to so very slight a knowledge of their habits, and the means of their management. Instead of 'how you get on with bees,' your communication is more in the character of a report of how they got on with you, if you will pardon the observation. The cheese-box swarmed, its swarm was put into a frame-hive, and both were sent to the moors. The tender combs of the latter broke down, as might reasonably have been expected, unless they were packed and carried with very great care. Nevertheless, in spite of the disaster they rallied and did well, giving you six swarms the next

year, *i.e.*, 1879. The cheese-box hive probably failed in requeening itself after swarming, and being sent to the heather queenless, it, of course, came back weak in bees. Mistaking the cause of its lightness, you fed it by raising it and inserting a fountain-feeder under its rim — a very old method of inviting robbers of all kinds—so it was not surprising that they deserted the hive, leaving it to be overrun with wasps or other vermin. The seven hives (swarms and stocks) were, it seems, 'fed hard all the last winter,' another mistake that ought to have killed the whole of them. The last swarm, of August, 1879, had the best chance; for being late it was necessarily fed at the right time, and thus stored its food in a 'natural' way, when sealing it up was possible, and breeding could go on to a reasonable extent. The others, without any knowledge on your part, whether they were queenless or otherwise, were obliged to take food all the winter, when they could not seal it up; and the probability is that dysentery set in and caused them to perish. The 'big cells,' a quarter of an inch in diameter, are drone-cells, built originally to receive honey, but afterwards, when bred in, producing only drones, as has so often been explained in the *Bee Journal*. Moths do not build cells: they lay eggs in the hive, and their larvæ eat away the combs and tend to destroy them. The brownish thimble-shaped cells are either those of drones that have been bred in worker-cells, as shown in *Bee Journal*, Vol. VII., p. 245, April last; or if pendulous, which you do not state, they are queen-cells probably in a state of formation: the clear, glazed end of one of them must be accidental, perhaps, through a snail. Breeding and pollen-cells are determined by their contents, as those of both drone and worker are used for storing honey and pollen, and breeding bees. When unsealed, their contents (if any) may be seen, the honey glistening and clear, the pollen of various colours—orange-yellow, green, and brown. When sealed, the honey-cells (both drone and worker) are covered with



WORKER CELLS. DRONE CELLS.

impermeable wax, usually white, but sometimes with a yellow cast; they present a surface of flattish corrugations. Sealed brood is dome-shaped; the sealing being a mixture of wax, pollen, and fibre; it is usually of the same colour as the comb upon which it is laid, varying from pale buff to dark-brown. The surface of the sealed worker brood-cells presents the appearance of a lot of peas pressed together, while the drone-cells suggest a mass of miniature sugar-loaves standing closely side by side. A practised eye will detect a queen in a moment if she presents herself, and a patient hand will look over the combs separately until she be found. The queen is as easy to distinguish from the drones and workers, as a kidney-bean is from a lot of peas and horse-beans, or as a brazil nut from barcelonas and chestnuts; but one must learn to know the difference. As regards supers and supering, the *Journal* for May shows reasons why no dates can be given for putting them on to hives. It is a question of expediency, and requires judgment; and their filling is no more a matter of course than that the sun crossing the line (so called) will determine the future seasons. Taking away the frames that are filled with honey is quite proper, so long as there is sufficient honey, or its equivalent, left in the hive for the use of the bees; but taking away combs of brood would be utter folly, or worse. Sugar and fruit are assuredly the chief constituents of *real jam;* but a cook or housewife must understand the difference between fruit and caterpillars, and must not stew up the latter simply because they are to be found on the same trees with the fruit—that would be a 'charming amusement,' indeed! You are quite correct in supposing that an extractor will throw out the brood from a comb, if it be whirled rapidly enough; but no sensible man would wilfully do it when honey only is wanted. When the honey has been carefully extracted, it is an advantage to be able to unseal and throw out the immature drone-brood from a hive, and thus prevent the advent of unwelcome drones. The carpenter is not singular amongst bee-keepers of the old school. With many, the queen, or mother bee, is the 'king,' who has a cell of his own to live in, and from which to issue his royal commands, which are implicitly obeyed. With such the drones are workers that have lost their stings, and grown lazy and fat; and it is not surprising that such bee-keepers are unable to recognise queen-cells, though they may have seen hundreds of them. We have no desire to get up a controversy on the relative merits of the authorities mentioned; history will find them a place hereafter, we can only be responsible for what appears under our own hand in the *Bee Journal;* and in that the secrets of the hive will be found revealed in language easily understandable. A queen-cell is a cell built up (or down) around an egg that is intended to be a perfect female when fully developed into life. It is deemed 'ripe' when it is almost ready to hatch; whilst being built it very much resembles an acorn cup (*a*) with very thin edges slightly drawn together; when complete it is somewhat like an acorn in its cup (*b*), and is then called a sealed queen-cell; and when ripe it will be found that the end has been partly pared by the bees to facilitate the coming forth of the queen when she bites her way out. Having bitten her way through, the cell assumes the *c* appearance, though the flap sometimes closes, and leaves the cell ap-

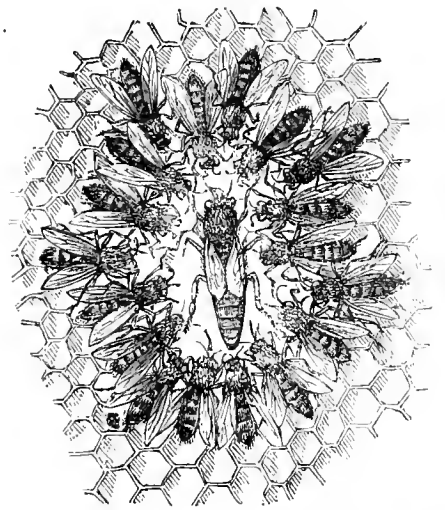


parently sound—a fact which leads the inexperienced discoverer thereof to believe that the bees had sealed up an empty cell, whereas it is but a 'mare's nest.' After the cell has been vacated the bees gnaw away the lower part of it, leaving it again of acorn-cup shape (*d*), but with thickened and widened edges. *e* shows a queen-cell newly torn open by a queen, *f* a queen-cell newly hatched without the flap. As regards the appearance of a queen, there is scarcely a book published that does not show the difference between the queen, and the drones and the workers. We would, however, recommend those who cannot recognise the difference to get an observatory hive containing a queen whose thorax has

been painted, so that no one could fail to discover her. The vendor of the hive and bees could touch her with a slight

QUEEN. DRONE. WORKER.

dab of white or red paint, and when seen she would almost invariably be found surrounded by a set of courtiers, as shown in the cut. After the eye had a



little tuition with a queen illuminated as suggested, there would be little difficulty in detecting other royal dames, however clad or surrounded. The method suggested for making artificial swarms would, in a measure, succeed; but would be very wasteful. Instead of taking a comb or two, with queen-cells on one of them, a comb with the queen herself should be taken, and put into the new hive on the old stand (as suggested), and all would be correct. To give bees egress from conservatories, cut away a quarter inch space from the front edge of the 'plate' on which the glass eaves rest. The aperture will be sufficient to allow bees to pass, but can be closed with a strip of wood or a short bit of cord, to keep out the cold air when ventilation is not needed. 'Prevention is better than cure,' and covering the ventilators with mosquito netting would save many hundreds of bees. If anything we have tried to elucidate has not been made plain, we shall be glad if you will inquire further, or if you are ever in our neighbourhood, and will favour us with a call, we will undertake to show you all we have tried to explain.—Ed.]

Honey a Remedial Agent in the Restoration of Sight.—A correspondent in *Church Bells* (May 29) says:—'I am desirous of your inserting a remedy, which has lately come to my personal knowledge, of a *gradual restoration* of sight to a person of about 55 years of age, whose eyes had been pronounced to have cataract by a clever medical practitioner, and that nothing could be done till sufficiently advanced to be operated on. The person heard, some time afterwards, that the simple process of anointing three times daily, with *pure* and *fresh* honey, first cleansing the lids of the eyes before applying it, would remove cataract. She tried the remedy successfully, and though now obliged to wear magnifying-glasses for reading, can otherwise see comfortably.'

Echoes from the Hives.

Battle, June 29, 1880.—'I have not heard how the bees are getting on around here. I know of one case in which the owner had one stock in the spring which swarmed twice, and the first swarm has swarmed three times.—J. W. Hallaway.'

York Road, Tunbridge Wells, June 29, 1880.—'Wherever I have been I have found that the mortality among bees, where not properly cared for, was frightful during last winter and spring. Some districts could not show a stock of bees alive, but it was cheering to see the prosperity of colonies under the care of intelligent bee-keepers, notably those of Mr. Griffin at Alphington, near Exeter, and of other gentlemen at Taunton and Bridgwater, in Somerset, and a friend in Monmouthshire had carried his safely through a most trying time. I see them well cared for down the South-Eastern line, some stocks at the Wadhurst railway station, in improved hives, looking in flourishing condition. For the first season for many years I am without bees of my own, but hope soon to fix on a good locality for their culture, and enjoy their constant companionship again.—P. H. Phillips.'

Chichester, July 6.—'What enormous quantities of honey bees are getting! This is the best season I ever knew. Two of my first swarms have already filled three large supers last week. I emptied some supers—I forget the number—with a result of upwards of 200 lbs. Should the weather continue as now for another month, the honey results in this part of the kingdom will be enormous.—Alfred Rusbridge.'

Rashwood, Droitwich, July 7, 1880.—'The foundation came to hand all right, and is most of it made into comb. I think your flat-bottomed quite as good as the more finished article. I put the sheet sent into a hive about 10 a.m. that day, and on looking at 3 p.m. the next found it half made into comb, and very regular. The weather here has been 'bad, very bad,' the last few days, though some time ago we were in for a good thing, but begin to doubt it.—H. W.'

Apiary, Sydney Road, Guildford, 12th July, 1880.—'Swarms in abundance. I commenced the season with a stock of ten hives. I have now thirty-one swarms, casts, and maiden-swarms, and "still they come,"—all strong swarms, of course at a great loss of honey, which the bees take instead of me.—F. H. Lemare.'

Winsford, July, 14.—[*After a removal*].—'What a mighty change, from the beautiful bee-flora to a sulphur-blighted land, not a vestige of the lovely flowers. And, O my poor bees! seventeen hives scattered all over by my removal to such a changed place. Three bad seasons, yet fate still pursues with unrelenting fury! When will the gods interpose? My Ligurians are showing themselves in their golden armour, and are doing prodigious feats. Still I must sell to reduce, therefore kindly insert—oh wretched!—I cannot help it—the enclosed advertisement in the subscribers' column.—Yours in grief, Parent Stock.

Wood foundation.—'I like the wooden foundation very much after a ten-days' trial. The season here is a *very* good one for honey-collecting.—*Bossell Park, Buckfastleigh, Devon, July* 19.'

Barcaldine, July 19*th*.—'Am pleased to be able to state that I have been successful in introducing a Ligurian queen put into the improved cage got from you. It was a grand sight to me the other day to notice the young worker-bees playing so lively. They are slender in form, and very distinct in colour.'—P. McPherson.

The Lawn, St. Leonards, July 23.—Extracting. Non-Swarming.—'I have succeeded in obtaining about

300 lbs. of honey, and shall take, in all probability, about 200 lbs. more, but the season generally in this neighbourhood has been disappointing. I attribute my success to your extractor, which enabled me to take a lot of honey in the busy time, and to the fact that my bees did not swarm. Those stocks that swarmed have done little or nothing.'

Westmoreland, July 24.—'The mortality amongst bees was very great in Westmoreland this spring. Many who did not feed in autumn lost their entire stock. Swarming generally was very late, and we have a very poor prospect for honey this season. Humane and scientific bee-keeping is spreading very fast in our county since your visit to Carlisle in 1878. Open driving has come very much into use; bar-frame hives also are much used now. For several years I have done a quantity of artificial swarming for my friends, many of whom now do it for their neighbours, so that the principle is spreading fast. Several are also well up in driving, transferring, and uniting.'—THOMAS HARRISON.

Nottingham, July 24th, 1880.—'Some of our friends in your July issue speak of taking big supers, filled with honey in a most tempting manner; but I fear that our bee lines have not fallen in such pleasant places. We have plenty of bees, but the weight of honey sealed up to this date has been very small. June was a wet month, and July has been a very stormy one, every fine day being usually followed by three or four wet or indifferent ones, so that I am afraid we shall not have any brilliant results to show for our pains in 1880. My first swarm issued on May 27th, the last on July 13th. This was from a skep which I had doubled on Mr. Pagden's plan on July 1st; but instead of building comb in the lower hive as I expected, they clustered in it for thirteen days and then swarmed suddenly. I gather from this, that nadirs are not certain to prevent swarming any more than supers. On June 27th I transferred a stock to a bar-frame hive (this was twenty-four days after swarming), and the weight of honey taken from the transferred comb was 7 lbs. Killing drones commenced on July 15th, and still continues.—W. S.'

Horsham.—'Mr. H. has never before had so prosperous a time, though he has kept bees forty years. The hive which lost its queen (about which he wrote) was treated as directed—with a brood-frame from another hive; and queen-cells were formed immediately, out of one of which her majesty walked one fine day, and he saw her, having first observed the largest queen-cell (closed the day before) was now open. This hive has progressed ever since, and has nearly filled a super. He has not altogether succeeded in preventing swarming. One box has swarmed and thrown out besides two casts, and also gave 9lbs. of honey from it in a glass super. Two others have swarmed only, thus three out of seven. One that did not swarm has already furnished over 50 lbs. in Neighbour's sectional super, and will afford (probably) 50 lbs. more. A Woodbury size, ten frames.'

Vale of York.—'The weather here since July set in has been most unfavourable; for the last fortnight nothing but thunderstorms, and rain, and the bees have been prisoners at home. I have not a single super filled, or even promising to be so. One of my strongest hives is throwing out its drones, though it has not swarmed. I suppose this betokens shortness of supplies.'—J. H.

Bodmin, Cornwall.—'Everywhere in this neighbourhood the bees seem in a most flourishing condition, and there seems every prospect of a very heavy yield of honey. Swarms are very plentiful. One swarm, a stranger, settled near my hives, and three weeks afterwards gave me a very good swarm. All my bees are working well in supers. I find the comb foundation you sent me answer admirably. I find tying two or three stout threads across the foundation prevents it curling up.'—F. C. G.

Queries and Replies.

QUERY No. 342.—*Good opportunity for Italianising (?)*—Would you oblige by giving me an explanation of this phenomenon? The bees in some hives all died in the last sharp frost we had about the end of January, but the hives were left standing as they had brood in them, which hatched out in the spring; but they do not seem to work as they should. Do you suppose as all the first lot died, they are minus a queen, or do you think they are all right? The hives are common straw skeps. If they are minus a queen, would it not be a good opportunity for Italianising?—J. T. LEWES, *June* 26, 1880.

REPLY TO QUERY No. 342.—When the bees died it is quite certain that the brood died also; there can be no doubt of that, and the bees in the hives must have come there since. They may be a swarm, or they may be robbers from another apiary. In the former case they have a queen, and in the latter they are only temporary visitors. It is further possible that they may be scouts from another hive looking out for a new home for a swarm; if so, they will probably come in a few days. In neither case do we recommend the introduction of a Ligurian queen. Leaving old hives of comb on stands is a reprehensible practice. They are called decoy hives, because they decoy other swarms to them; and leaving them for that purpose is not thought honest amongst bee-keepers. In your case it is evidently the result of carelessness, and the want of knowledge of the natural history of bees. The eggs of a bee will not hatch without heat, and the brood, when hatched, will die through lack of food and heat. In this case the chances are against there being any of either in the hives when the bees died, and this makes them more in the character of objectionable decoy hives as mentioned.—ED.

QUERY No. 343.—I have a queenless stock of bees, about 200 in number, and do not know what to do with them. Do you think it would be practicable to introduce a Ligurian queen to them, and with advantage? or would a common queen be better?—J. B. J., *Finsbury.*

REPLY TO QUERY No. 343.—It is difficult to believe that so little is known of bee-culture as the foregoing implies. Of course we scouted the idea of requeening such a stock, except by uniting a swarm or cast to it.—ED.

QUERY No. 344.—I have several hives in which the combs are five years old and very dark-coloured. Is it advisable to change them? If so, what is the best method,—to cut them out and leave the bees to make fresh ones, or to fill them with flat foundation?—J. H.

REPLY TO QUERY No. 344.—The condition of the combs and bees will afford the best indication of the necessity for changing the former, should a change be needful. If the bees are brisk, of fair size, and plentiful, there can be little the matter. When a change is determined on, we would cut out the objectionable combs and fill up the frames with comb foundation.—ED.

QUERY No. 345.—Will you tell me if bees, when driven in the middle or end of September from a cottager's skep hive, to save them from being smothered, into a bar-frame hive, can fill their hive with sufficient comb to protect them during the winter, and store syrup given to them?—K. C. J.

REPLY TO QUERY No. 345.—If put into hives with frames filled with foundation that will not sag, they will build out their comb in a week, provided they have food.—ED.

QUERY No. 346.—*Honey Jars.*—Will you please write me, and let me know if you can do the 1-lb. glass honey jars cheaper than 15*s.* a gross, as they are advertised at that, and customers do not want to give more than 1*s.* 3*d.* a dozen? If you can allow me a profit I can do with some.—R. HARBOROUGH.

Reply to Query No. 346.—As a matter of fact we make no profit on the honey jars, and therefore can allow none. After a very great trouble we found a man who works in his own factory, and having obtained his prices we went in for the prize offered by the British Bee-keepers' Association, and received it; and that was practically a premium for discovering a cheap market. All who want them can get them at the prices named, viz. 15*s.* and 18*s.* per gross, plus the charges for packing and the carriage from Birmingham, which is all we can offer. The establishment of depôts, or agencies, is out of the question, except at an advance, and *that* the traders must arrange for themselves. We have had many applications for our manufacturer's address, which we decline to give. He is a poor, hard-working man, who is grateful for the business bee-keeping has put in his way; and while our arrangement exists, bee-keepers and those who preserve fruits may benefit by it without the *assistance* of a *middleman* if they please.—Ed.

Query No. 347.—*Ventilation.*—Mr. Cowan advocates the covering of floor-boards during the winter months. Is this a safe plan to adopt in very severe frosty weather, and would it be advisable also in the summer, as I notice that a great deal of 'fanning' goes on at the entrance day and night?

(2)—*Supering.*—Some three weeks since I placed a very large swarm into one of Abbott's Standard Hives, No. 1, supplied with comb-foundation to each of the ten frames. They were very soon settled in their new domicile, and began to work with a will amongst the field beans, of which there are many acres in blossom in the immediate locality. Under such favourable circumstances, should supers be supplied to them this year; and when? I have given them one bottle of syrup only. The last few days I have noticed several drones passing in and out of the hive. Did they come with the swarm?—C. N. H.

Reply to Query No. 347.—*Ventilation.*—When Mr. Cowan advocated the lowering of floor- and the raising of crown boards for winter ventilation, he kept his bees within doors, in lofts, &c., where they were not subject to severe storms of wind. We cannot say if he now advocates the plan; but certainly *we* do not, particularly in 'severe frosty weather.' In summer, when there is much fanning, we recommend bottom ventilation, by enlarging the entrance, or lowering the floor-board along the front. Perhaps Mr. Cowan will oblige us all round by giving his later experience in his new locality.

(2) Put on the supers by all means, as advised in the *Journal* for June, lately to hand. The drones may have come with the swarm, or have found their way into the hive since. Perhaps the hive contemplates throwing off a virgin swarm, in which case the drones would be welcome, though strangers.—Ed.

Query No. 348.—*Extracting.*—(1) I find your extractor most valuable, more especially for the stock hives, as the bees in old hives rarely go up into supers. When a hive is very full of bees I find it generally impossible to find the queen without shaking the bees off, so as to put the comb in the extractor. I always put a large board in front of the entrance and shake the bees on to it. Is there much risk of losing the queen by so doing?

(2) One of my stock-hives swarmed on the 9th June, and has not swarmed since. It was full of honey and bees, and I took out all the combs yesterday, and extracted the honey. In so doing I did not see a trace of brood in any stages. Do you think the hive will be queenless? It is crammed with bees, and after shaking them on to a board they ran into the hive, and many *set* (stood on their heads) at the entrance. Is this latter performance a certain sign that they have a queen? If so, why does she not breed?—J. W. H., *Ripon, June* 29.

Reply to Query No. 348.—There is not much immediate risk of losing the queen by the mode of operating suggested; but it is very likely to cause robbing, as when the bees are shaken on to the board some of the liquid honey will be shaken out; and if the bees of other hives are not more agreeably engaged in fields of plenty they will be attracted there too. The bees of the hive operated on having been 'quieted,' will not be in good condition to repel robbers, and much evil might result.

(2) Twenty-one days after first swarming is about the time when there is least likelihood of finding brood in the hive. The bees standing on their heads is not a sign of queenlessness or otherwise, but is more indicative of alarm on their part. The queen is probably not more than about ten to twelve days old; she will, if present, begin to lay in a day or two.—Ed.

NOTICES TO CORRESPONDENTS & INQUIRERS.

M.—*Plurality of Queens with Casts.*—The experience related was anticipated on p. 44 of our last issue. It is not uncommon for several queens to come off with a cast.

J. Bruce.—If you will kindly favour us with your address we shall be glad to communicate with you.

Inquirer.—1. The mode of fixing guides was fully explained in May *Journal*. 2. We cannot tell the best week or month for taking the honey and uniting the bees to other stocks, but should do it at the end of the harvest. 3. There is no objection whatever to healthy old comb for wintering and breeding in. 4. Uniting was fully described in October *Journal*. It means marrying the bees of different stocks without respect to the combs they are on. 5. Honey flies out of that side of the comb which is farthest from the centre of the machine; the whirling tends to throw it from the centre as water is thrown from a 'trundled' mop, or mud from the wheel of a carriage. Centrifugal force acting in an outward direction from the centre, it is impossible that the honey on the inner side of the comb can be extracted thereby.

Wasps, *Limerick.*—Wasps do not attack bees. They will plunder from their stores if they can reach them, or they will bite off the abdomen of an injured bee and carry it away for home consumption, but they will not face or fight a healthy one. To keep them out of a hive, the population should be sufficiently strong to protect it; keep the entrance narrow, and fill up all openings about the edges, that the bees may have only the one opening to defend. It is, however, far better to get rid of the wasps; find their nest and inject a gill of turpentine into it, closing the hole with a plaster of soft clay. If this be done at night, when all are at home, all will be killed, and may be dug out in half-an-hour. No fire is required.

Post-cards.—The reply was sent per post-card, there being no stamp or envelope enclosed with the query. During the week ending the 17th July we replied per post to nearly two hundred queries on bee matters, for ninety-one of which we had to pay the postage. Our poor right hand often protests against the labour of writing so much; although change of work is sometimes considered as good as play, it is not particularly refreshing to have to put it so often into our own pocket. Licking penny stamps under such circumstances is not conducive to health or good temper. Post-cards in these cases, if not thankfully received, ought at least to be considered of value.

R. S., *Bedford.*—*Swarms returning to their hives.*—Your remarks on swarms issuing and returning apply generally this year, the queens which have survived the winter appearing to be unable to join them, as explained in previous *Journals*. Coupling this with the fact so commonly observed this year of queens being destroyed by encasement, an idea is suggested that they were victims to the stimulative efforts of the bees at a time when breeding could not go on through the absence of pollen. On no other ground can we account for the loss of and injury to queens that have been so prevalent during this season.

BEE AND HONEY SHOWS FIXED FOR 1880.

Aug. 5.—West Kent.
Aug. 10.—Weston super Mare.
Aug. 11.—Melksham.
Aug. 11.—Dorsetshire County.
Aug. 11, 12.—Surrey County.
Aug. 18, 19.—Shropshire County.
Aug. 20, 21.—Herts County, at St. Albans.
Aug. 25.—East Scotland. Arbroath.
Aug. 26, 27, 28.—At Dundee.
Sept. 4.—Stirling.
Sept. 9.—Lincolnshire, at Boston.
Sept. 13.—Honey Fair, Grantham.

BEE TENT ENGAGEMENTS.

BRITISH BEE-KEEPERS' ASSOCIATION.

Aug. 3.—West Wycombe.
Aug. 5.—West Kent Show.
Aug. 11.—Dorchester.
Aug. 11.—Eastbourne.
Aug. 11, 12.—Surrey County Show.
Aug. 18, 19.—Shropshire County Show.
Aug. 24.—Long Buckby Horticultural Show.
Aug. 27.—Sandy.
Sept. 3.—Devon and Exeter County Show.
Sept. 7.—Suffolk County Show at Ipswich.
Sept. 7, 8.—Warwick County Show.
Sept. 17.—Great Dunmow.

HERTFORDSHIRE COUNTY ASSOCIATION.

Aug. 3.—Frogmore Cottage Garden Show.
Aug. 18.—Rickmansworth.
Aug. 20, 21.—County Show of Flowers, Fruits, Vegetables, Bees, Hives, &c., at St. Albans.
Aug. 27.—Much Hadham Cottage Garden Show.
Sept. 2.—Harpenden Horticultural Show.
Sept. 9.—Bengeo Cottage Garden Show.

TOUR IN IRELAND.

Aug. 10.—Royal Agricultural Show in Clonmel.
Aug. 18.—Maryborough County Agricultural Show.
Aug. 28.—Newry.
Sept. 2.—Newtownards Flower Show. Near Belfast.

VEGETABLE PARCHMENT for Covering Glasses and Jars of Honey, &c., 2*s.* per lb. Sample Sheet, 4*d.* Prices for larger quotations on application.
ABBOTT BROS.

COMB FOUNDATION.—The best American, as per Abbott's Catalogue. RAITT'S FOUNDATION at his prices, from ABBOTT BROS., Fairlawn, Southall, Middlesex.

FOR SALE.—Two Double-walled WOODBURY HIVES, with fixed legs. Complete, 10*s.* 6*d.* each. One Single-wall WOODBURY HIVE, with two Supers, 7*s.* 6*d.* HONEY EXTRACTOR, 5*s.* 'BEE JOURNAL'—Vol. II., commencing at No. 17; Vol. III., complete; Vol. IV., complete; 10*s.* 6*d.* C. H. GOODMAN, Lesness Heath, Kent.

REMOVAL.—A few BLACK STOCKS or SWARMS to SELL. Earliest in the neighbourhood. STATION MASTER, C.L.C., Winsford. fo. 47

BY KIND PERMISSION.

PHOTOGRAPHS of the late JOHN HUNTER, ESQ. may be obtained of T. B. BLOW, Welwyn, Herts. Prices—Cabinet, 1*s.* 6*d.*; Carte-de-Visite, 1*s.*

MODERN BEE-KEEPING. A Handbook for Cottagers. Price 6*d.* Published by the BRITISH BEE-KEEPERS' ASSOCIATION.

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To meet the wants of Subscribers who require a cheap mode of advertising their wants, we have opened an Advertising Column, for non-trading Subscribers only, wherein they may make their wants or wishes known at the rate of One Penny for every six words, or part of six words, but no advertisement must contain more than thirty-six words.

Stamps to accompany in all cases, and there can be no reduction for repetitions.

FOR SALE.—Vol. III. of *British Bee Journal*, complete. Unbound, 4*s.*

LANGSTROTH on 'The Hive and Honey Bee.' 9*s.* Free.

QUINBY on 'The Mysteries of the Bee-hive.' 8*s.* 6*d.* Free.

FOR SALE.—Nos. 2, 3, 4, 8, and 10, of *B. B. Journal*, 1*s.* each.

VOL. II. *B. B. Journal*, with Index, minus the No. for May, 5*s.*

VOL. II. *B. B. Journal*, minus May and Aug. Nos., 3*s.*

INDEX, Vol. I. Price 6*d.* Apply to Editor. fo. 100

SEND Two Stamps for Abbott Bros'. Catalogue. Southall, Middlesex.

DRY PUFF BALL, for fumigating Bees. Will render them perfectly harmless to the comfort of the most timid. 1*s.* per packet. S. F. CLUTTEN, Fressingfield, Harleston, Norfolk. fo. 32

WILL give 3*s.* 6*d.* per year for 'American Bee Journal,' or 'Gleanings in Bee Culture,' post free, end of month, or 6*s.* for both. C. E. NORTON, Shaftesbury. fo. 45

BEES for SALE.—Good strong Stocks in Straw (4); or would exchange for Abbott's Royal Paris Prize Double-walled Hives. J. TRAYNOR, Tinahely.

FOR SALE.—Several strong Swarms in Frame Hives. Apply to W. SMITH, Strensall Vicarage, York. fo. 49

FOR SALE.—6 Drawers for Supers, for Woodbury Hive. 2 Crystal Palace Supers. 1 Abbott's Tin Feeding Regulator, complete. 4 Abbott's Feeding Bottles, small size. 9 Feeding Stages. 1 Edwards' do., tin. 2 Neighbour's do. 2 Swarm Boxes. 1 Straw Storifier, complete. 2 Pagden's Nadirs. 4 Pagden's Adapting Boards for Queen exclusion. 4 Nucleus Hives. 1 Carr's Hive, complete with Stand and Floor-board. 1 Carr-Stewarton, and Floor-board and Stand. 1 Carr-Stewarton Honey-box. 2 Ditto Supers. 1 Sherrington Super. To clear out, low prices will be taken. Letters to Editor. fo. 200

THREE Neighbour's Mahogany-top Feeders, 3*s.* each. 1 Neighbour's 35*s.* Improved Cottager's Hive, second-hand, with 3 bell-glasses, 10*s.* 6*d.* 1 Land Measuring Chain, 66 feet (invaluable for Cricketers), 3*s.* 6*d.* 1 Hexagon Stock Box, 1 window, 2*s.* 6*d.* 2 Octagon Stock Boxes, 3 windows, each, 3*s.* 6*d.* Nucleus Hive 3 Woodbury Frames, each, 2*s.* 6*d.* Nucleus Hive 3 Standard size Frames, each, 3*s.* 6*d.*

FOR SALE or EXCHANGE.—A General System of Nature through the Three Grand Kingdoms, by Linné, 7 vols., leather, beautiful condition. Published 1806.

[These are the property of a Cottage Bee-keeper, near Bristol, who is leading off a pure English Queen and Swarm of young Britons to New Zealand.—ED.]

PRIME BEES' WAX at 1*s.* 9*d.* per lb., in large or small quantities. Address ABBOTT BROS., Fairlawn, Southall.

THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

[No. 89. Vol. VIII.] SEPTEMBER, 1880. [Published Monthly.]

Editorial, Notices, &c.

THE BEE TENT IN IRELAND.

On Wednesday, the 4th ultimo, the Tent of the British Bee-keepers' Association was entrusted to the care of the London and South-Western Railway Company in London for transport to Clonmel Show-yard, on the distinct understanding, as expressed on the address label, that it should be delivered at the latter place on Monday, the 9th, to be in good time for the Show, which had been fixed for the 11th, 12th, and 13th of that month. In perfect confidence that the arrangements were complete, Messrs. Abbott and Carr, as representatives of the British Bee-keepers' Association, accompanied by Mr. Timberlake, who was to take charge of the Tent, started for Ireland on the 7th, *vid* Bristol, and arrived at Waterford on the evening of the 8th (Sunday).

The journey to Bristol was performed in a ceaseless downpour of rain, which continued until the vessel, the steamship *Reginald*, started at a quarter past seven p.m., when the wind arose and blew a hurricane such as had not been known in the summer season for many years, as testified by Captain Bunns and his chief mate; and the passengers in consequence were exceedingly discomfited. The passage occupied 21½ hours, and but for the weather would have been most enjoyable. The cabin arrangements were perfect, but the steerage was simply abominable from the smell of cattle and the deodorisers (?) used for sanitary purposes; and the poor fellows with their wives and families, who for their own comfort (?) had stowed themselves amidship in the cattle pens, suffered terribly. The scenery on both sides (leaving Bristol) is magnificent, and but for the smoke of the tug which towed the ship out of harbour, was an unmitigated source of pleasure; but when cast off, and the ship reached the open sea, the faces of the majority of the passengers paled considerably, and appeals to steward and stewardess were unpleasantly frequent, many, especially the ladies, becoming quite prostrated. The night passed, however, and by midday the wind moderated, and about 2 p.m. sails were hoisted, when the ship flew over the water, and the passengers began to reappear; Ireland was well in sight, the rugged outline gradually assumed form, and presently its beautiful scenery came well into view, and elicited the intense admiration of all. A pleasant passage of nineteen miles through the tortuous windings of the river Suir, each bend discovering fresh beauties, completed the journey to Waterford at about 5 p.m.

On arrival, our first care was for the bees we had with us, it being important that they should be set at liberty; and having discovered an hotel (the Adelphi), where the accommodation could be obtained, we took up our quarters there.

Next day we ('we' includes the whole trio) sought out the Waterford Shipping Company, and having represented to them that our visit to Ireland was for Ireland's benefit, they cheerfully remitted the charge made at Bristol in respect of the transit of the bees, which we were not then in a position to question. Our next business was with the Waterford and Central Railway authorities, Mr. Carr having an introduction to Mr. Williams, the courteous manager, through Mr. White, of Queen Anne's Gate, St. James's, and were most kindly received.

Mr. Williams showed us every possible attention and gave great assistance, obligingly issuing free passes to and fro between Waterford and Maryborough on that railway, an example that remained unique. In packing up the bees for transit to Clonmel we discovered that one of the queens had died, perhaps of sea-sickness, and a telegram was sent to Southall for another, which duly arrived by post, a circumstance that caused considerable interest at the Show-yard, as may be inferred from the Press reports of the Show. Our journey from Waterford to Clonmel took us through near thirty miles of mountainous country of undoubted fertility, the scenery being simply charming. We saw two skeps of bees only on the way, the first we have seen in Ireland,—a circumstance the more to be deplored since the land is literally overflowing with honey, clover, limes, and heather abounding in profusion. On reaching the show-yard, we were taken aback by the information that the Bee Tent had not turned up, and no bees having been obtained we felt considerably nonplussed. Playing Hamlet without the Prince of Denmark was not our forte, so scattering, we hunted the railway stations, the

Show-yard, and the quays, and could get no tidings of it, but were buoyed up by the information that trains and boats would be shortly due, and it might yet be in time. For the absence of bees we were in a measure prepared by a communication received ere starting from England from the Rev. G. A. Procter of Tullamelan, an advanced bee-keeper of the modern school, who, while deploring the almost total absence of bees around Clonmel through the badness of former seasons and the ignorance of bee-keepers in general, gave hope of substantial aid from his own apiary. Pending the coming of the trains, &c., in which our hopes for the arrival of the Bee Tent were centred, a visit was made to Mr. Procter; and it is with no slight degree of pleasure that we are able to report on the excellence of his bee-keeping arrangements. Nearly fifty large hives containing Langstroth frames (18 inches by 11) studded his apiary, every one evidencing health and prosperity, though a temporary lull, through a spell of bad weather, had prevented the completion of the magnificent supers and sections with which the majority of the hives were surmounted or surrounded. It may, however, be taken for granted that the splendid weather with which the country is now blessed, will enable the bees to complete a magnificent harvest, and many hundredweights will yet be stored in this 'vale of honey,' the beautiful 'Glen meil' known in the present day as Clonmel. Mr. Procter manufactures his own hives and the chief of his appliances, and dearly loves his bees; yet in the interest of the science had prepared himself by the purchase of strainer canvas, to be tempted to send what he could to the show ground for manipulation, and this he most willingly undertook and did, and justly deserves the thanks of the Irish community for his generous kindness, for without his help the Bee Show at Clonmel would have been poor indeed. We (Carr and Abbott) were most kindly entertained at Tullamelan, and left our hospitable friend in need with feelings of sincere gratitude.

Returning to the Railway Station, our hopes for the Tent were so weakened that preparations were made for extemporising a substitute, which, however, could not be made ready until the evening of the 11th; and thus the first day of the Show was lost so far as the object of our visit was concerned. Writing solely in respect of the latter, for our *Journal* is '*devoted to bee-culture*,' and cannot meddle in other matters, we may safely say that the proceedings in the extemporised Bee Tent, notwithstanding the difficulties of the case, produced a profound sensation.

The *Freeman's Journal* says,—

'A good deal of interest was centred in the "Bee Tent." It was expected that the mysteries of bee-culture would have been exhibited and illustrated yesterday; and in point of fact everything was ready for the purpose. The Tent was there, the lecturer was there, the gauze nets were provided in profusion, and the public were ready to be informed; but the busy bees themselves were not forthcoming.* It appears that a supply of these industrious little insects were (*sic*) forwarded from London; but, unfortunately, the Cockney strangers went astray on the road, and did not turn up in time. The result was that Irish bees had been substituted, and seem to take rather kindly to the experiments. It is a curious fact, and one illustrating a strange incident in the development of bee-culture, that the queen-bee was actually sent by post from London. She was enclosed in a box with a wire-gauze cover; attending her majesty was a small retinue of her loyal subjects, who, as was explained by the bee-lecturer, fed her on the way, a small tube of water and some sugar having been supplied by way of provision for the journey to Ireland. In the afternoon the science of bee-keeping was fully explained in a most interesting lecture.'

The *Irish Times* gives a far more lucid account of the proceedings, which testifies to the painstaking energy of the reporters for that distinguished newspaper. It says :—

'Under the auspices of the British Bee-keepers' Association, a series of demonstrations as to the most approved manipulation of bees is being given. Unfortunately, the Tent of the Association was lost, and an extemporised screen had to be erected, so that the experiments were conducted somewhat under difficulties. The operations witnessed were extremely interesting. Mr. Abbott of Southall, London, manipulated the bees as if they had no stings, while Mr. Carr of Manchester explained the various operations. We were shown how to drive the bees from hive to hive, and thus assist nature in forming swarms, and preventing the bees wasting valuable time in clustering about the hive's mouth, a most useful feature. The management of frame-hives was also shown, a hive having been brought from London for that purpose. Queens also were exhibited, the mode of raising them from the egg, the shape and state of the cells in which they are cradled, all being most eagerly explained. There are so many features of interest connected with this department of the show that full description is impossible, and a visit most essential. There are numerous appliances on view, the uses of which were explained, and created great interest, such as the mode of feeding bees, extracting honey, packing hives for summer and winter, the use of supers, the mode of fixing comb-foundation to help the bees in their work of comb-building, the mode of sending out queen-bees per post or otherwise, the cages used in introducing them, and many other matters which tend to show the depth of thought and care bestowed on the cultivation of these interesting and valuable insects. The Rev. G. A. Procter, of Tullamelan, one of the stewards, was present; and endorsed the views of the exhibitors as to the profitable nature of bee-keeping as a business pursuit, himself keeping bees extensively on the modern system. Doubtless the visit of the British Bee Tent will be most valuable, as the bees perform so important a part in agriculture.'

The *Clonmel Chronicle* gives the following excellent account of the experiments, which were many times repeated :—

'Owing to some disappointment the Tent of the British Bee Association did not arrive in time, but the officials connected with this interesting exhibition improvised a marquee, which was found to answer the purpose excellently. They had with them a good stock of bees, and the various improved modern appliances, which illustrated most perfectly the system of bee-keeping. They were also kindly favoured with a strong stock of bees

* This statement is rather garbled, and considering it was the Tent and not the bees that went astray, may be regarded as unique. The 'gauze nets in profusion' consisted of one straight piece of gauze twelve yards long and nearly a yard wide attached to the side of the Tent for the public to see through.—Ed.

belonging to an esteemed clergyman in this neighbourhood, the Rev. George A. Procter, Rector of Tullamelan, who takes an enlightened interest in this special and interesting subject. The tent was opened for exhibition on Thursday and on yesterday at stated hours each day, and on these occasions a number of very interesting experiments were displayed by Mr. C. N. Abbott, Editor of the *British Bee Journal*, in a most successful manner; while Mr. W. Carr, of Manchester, delivered addresses respecting the different modes of bee-keeping, as illustrated by the various manipulations which Mr. Abbott had gone through. The interesting process of driving bees from a full hive to an empty one was shown, and perfectly carried out. The *modus operandi* was as follows:—From a tube, to which a small bellows was attached, a quantity of smoke, obtained from burning pieces of brown paper, corduroy,—in fact, anything igniteable, was ejected over the top of the combs, when the bees becoming alarmed, rushed to their cells, and filled themselves with their store of honey to carry away with them in their emergency. The operator then struck the sides of the straw skep (or hive), when the bees commenced to migrate from the lower to the upper chamber—in fact, swarming out, but slowly, well filled with honey. As was afterwards shown, the bees became quite tame, and Mr. Carr handed round to the visitors literally bunches of the little insects. The more courageous of the lookers-on received them at first rather unwillingly, but with perfect impunity, as the result proved. While present we did not hear of a sting having been suffered by any one. So much for the process of "driving." Several times the queen-bee was captured from the swarm and exhibited around. She was distinguished by her greater length, smaller body, lighter colour, and smaller wings overlapping each other across the body. We may mention in connexion with this part of the exhibition that the owners of the tent, in coming across from England, lost one of their queen-bees. They sent a message back to their head-quarters to be supplied with another, and she arrived safely by post. Next it was shown how much easier and better it is to keep bees in bar-frame hives, from which the honey can be taken away with great facility; further, how much better the practice is of creating artificial swarms than to leave the bees to their own habits of swarming, when there is considerable likelihood of losing the honey. There was a further interesting experiment shown, viz., a mode of extracting the honey in a machine, into which the comb was placed; the handle was then twirled round rapidly, and the honey driven out into a receiver by centrifugal force. Thus the pure liquid was obtained without any admixture of the wax, whilst the brood in the comb were perfectly preserved.'

Leaving Clonmel, we returned to Waterford, whence we were enabled to take advantage of the 'passes,' so kindly furnished, over the railway to Maryborough, at which place we arrived on Monday, the 16th, and were most kindly received by Dr. Symes, the local Hon. Secretary of the Show, and by his help enabled to secure bees for manipulation from Mountmellick, a village near by. Our appearance at this place was welcomed by the bee-keeping gentry, who were glad of our services in rectifying their hives, and the 'charm' which was supposed to influence the bees was the subject of much wonderment, though nothing was used but tobacco-smoke. The road from Maryborough to Mountmellick runs across a peat moor of many miles extent, covered in the main with beautiful blooming heather, which would have yielded tons of honey had there been bees to extract it; but alas! the bees were not there, and the honey wasted itself in a land where waste of any kind can be but ill afforded. On the evening before the Show we heard of a stock of bees at a farm at Rosslean (?), about a mile from Maryborough, whose owner, Mr. Clarke, offered them for manipulation if we would put the bees into a new hive. They had been ten years in their then abode, and he had never had any profit from them, and thought the combs must be too old. We at once started (with Mr. Carr), and discovered one of the finest specimens of bee colonisation we had ever seen. It consisted of an old cheese-box set on a pig-tub top, and surmounted with three old skeps, which had stood so long and suffered so much from exposure that they were as rotten as tinder, and had subsided, the upper into the lower, until all above the cheese-box was a heap of old comb and powdered thatch. There were holes all round it, one, where a rat had nestled, being as large as a saucer, and several others through which mice and snails had played hide-and-seek. The cheese-box had sunk in at the top, and the floor-board had rotted at all its joints, so that the bees could get in and out all round it, and all over it indeed, for it was thoroughly 'honey-combed.' The bees having had no disturbance for years were hot-headed home rulers, and resented our inquisition, but, after consultation, we determined to operate upon them forthwith, as they were totally unfit for removal to the show-ground, since it was almost impossible to confine them for transit. We therefore had an 'exhibition' at short notice, and having explained to Mr. Clarke and his farm-men what would be done, set to work, and having smoked the bees in (for they were lying out all over the heap), and done our best to make them gorge themselves, we chopped and prised the whole thing to pieces with a spade, and having forced out what bees we could by kicking the clumps, and ascertained that the queen was safe in the new hive, we tore the comb to pieces in the best way we could, separated the brood-combs from those containing honey, brushed the bees on to or about their stand, and received the most earnest thanks of the farmer, and the offer of all the honey and combs we had removed for our trouble, an offer which, under the circumstances, we begged leave to decline. Never in our experience had we seen such a case; here was a box of less than a quarter of an inch in thickness standing on a big floor-board, exposed to all the vicissitudes of the climate, rotten and full of holes, exposed also at all points to invasion by insect and other enemies, yet continuing strong, healthy, and prosperous.

After such an experience, one's faith in the necessity for elaborate contrivances and gimcrack hives, with special appliances for summering and wintering, would be considerably impaired, and the conviction assured that bees will do well in anything, and that improved hives are merely for the convenience of the bee-keeper, a state of matters to which we have pointed on many previous occasions.

At the Maryborough Show there was little to call for special remarks during the day. There

was the usual driving, transferring, and extracting, with full explanations by Mr. Carr; the frame-hive and its facile management were also many times exhibited, and the greatest interest was created amongst those who had witnessed the operations.

In the evening the lessons on subduing and driving the bees, and taking their honey, received practical acknowledgment in a very unexpected fashion. A lot of urchins, no part of whose bodies was protected from stings, got possession of a splendid hive, the property of a lady at Mountmellick; and in a few moments had devoured all the honey, and the greater part of the brood, &c., leaving the bees and only two pieces of brood-comb in the capsized hive.

It is unfortunate that the first result of our efforts to promote improvement in bee-culture was the creation of a horde of juvenile 'bee-lifters;' but the fact of their so quickly accepting and practising the method of taking honey, which we had shown to be so easy, will perhaps do more to satisfy the doubting mind of our audiences as to the *bona fides* of our experiments, than any argument we could orally advance. The feeling of anger at the intrusion of these young scamps who (as Josh Billings says of 'unny bees') 'can get over a very high fens',' gives place, on consideration, to a hope that the sharp appreciation of the youngsters will in turn be appreciated by their elders, and that means will be adopted by which the rising generation will be initiated into the mysteries of bee-keeping, with a view to the development of the art as a remunerative industry. Ireland teems with bee flora, it is literally flowing with honey, and were bee-culture recognised and taught to its youthful population it would become a highly remunerative source of revenue. When will our Government awaken to its importance? and make it a necessary branch of national education?

While at Maryborough we were sought out by the Rev. J. M. Aldridge of Eyrecourt Vicarage, Co. Galway, who is most anxious for the welfare of the people under his care, with a view to an exhibition of the usual character in his neighbourhood, and on the day following (Aug. 19) received a telegram from him stating that he had arranged a demonstration for the 25th; and we accordingly made a détour to that place, he, in conjunction with others of local influence, guaranteeing an appreciative audience. We were also visited by a cottager correspondent of the *Bee Journal*, Mr. Traynor, from Tinahely, sixty miles distant, who, we regret to say, was sadly inconvenienced by the show having been announced for the 18th, whereas it had been arranged for the 19th, on the occasion of the Queen's County Agricultural Show—an error which was not ours, and which we did not discover until we had reached the showyard on the 16th. Mr. Traynor was, however, determined not to miss the opportunity for witnessing the manipulations, and, while gleaning information for himself, afforded most valuable assistance in the Bee Tent.

The distance from our office will preclude the possibility of further report until next month, when we hope to resume the subject.

SEPTEMBER.

During this month the bee-keeper should make every possible preparation for the coming winter. The weather during the past, especially in Ireland, where we now write, has been most delightful; and those who have the heather (which abounds here) within reach of their bees, will have great stores of honey in their hives, provided they were healthy and well arranged when the harvest set in. Before the month closes the harvest will be over, as it has been already in many parts of the kingdom, and we cannot too strongly advise that immediately on its cessation a thorough examination should be made, and all queenless and weak stocks united and fed up, that they may store and seal up a sufficiency of food for winter ere cold weather sets in. There are many localities in which the harvest closed during the early weeks of August, and having been removed, the bees have little store, and are now scarcely able to get even a hand-to-mouth living, and in such cases we would remind their owners of the necessity for gentle feeding, which will stimulate the bees to continue their breeding, and enable them to go into winter quarters with a youthful population which will live, instead of an aged one that will be physically unable to withstand winter hardships.

This is an oft-told tale, but one of which too many need reminding; they do not intend to neglect the bees, but too often put off the attention necessary for their welfare until it is too late to be effectual. Delays in this particular are dangerous, and procrastinators must not complain if their neglect lands them in serious winter difficulties. Being absent from England, we are not able to enter largely upon the state of bee affairs there, but here in Ireland, notwithstanding the immense natural advantages its magnificent floral condition offers, bee-keeping is at a very low ebb.

The adverse seasons, 1878–9, destroyed the great majority of those that had existence, and the country is almost beeless. There was a market at Waterford (a honey factor's), where the peasants and small farmers used to bring their skeps of comb and brood (the bees having been killed with brimstone fumes) by the cart-load, and where several tons of honey (?) were annually expressed, but now there is little, if any, and the people are too poor to begin again. The bees that we have seen,—and, save those so ably kept by the Rev. Mr. Procter, of Tullamelan, they have been few indeed,—are very poorly cared for. Supering seems to be almost unknown, and nadiring but little practised, the brimstone pit rules, the skeps are put down yearly; and though honey be ever so abundant, the bees cannot store more than they will hold,

but hang idly about the hives, or swarm out when it is too late for them to be of service under existing conditions.

LINCOLNSHIRE BEE-KEEPERS' ASSOCIATION.

We desire to draw the attention of our readers to the announcement of this important County Show, which is to be held on the 9th inst. at Boston, under the patronage of the Mayor; and we would urge our friends to support it both by their presence and by forwarding exhibits, so that this Association may continue to maintain the prominent position it has held in former years amongst kindred societies, and enable the committee to chronicle another successful result to their self-denying labours. We regret to hear that the yield of honey in Lincolnshire has been very indifferent this season; this will afford a grand opportunity for those in more favoured districts to surprise the bee-keepers in Lincolnshire.

We would also direct attention to the announcement of an address to be given by the Rev. Herbert R. Peel, Hon. Secretary of the British Bee-keepers' Association, on the evening preceding the Show at Boston, on 'Bee-keeping in England in 1880.' Such a subject from so able an exponent will be looked forward to with no little interest by the bee-keeping world generally.

AUTUMN FEEDING.

If skeps at the middle of September weigh 20 lbs. they may generally be considered heavy enough to stand the winter; but allowance must be made if the combs be old and heavy, when the weight ought to be more than that stated; but with frame-hives each stock will be amply provided if it have about two square feet of sealed store. If the bee-keeper does not intend to extract his honey, poor hives may often be most conveniently assisted by exchanging one or two combs with their richer neighbours. In feeding to bring stocks up to the required weight, the syrup should contain 5 lbs. of sugar to each quart of water. Let this syrup be taken quickly, or much of it will be employed for raising brood.

Feeding at the close of the honey-harvest has often for its object the raising of young bees. This is called 'stimulative' feeding. In this case the food is given slowly, but very regularly, a gill more or less each evening; and the result is the encouragement of the queen in egg-laying, by which is raised a large population of young bees, which will live well into the succeeding spring, and keep the stock strong until other hatchers of brood are ready to take their place. The syrup used for brood-raising should contain about 3 lbs. of sugar to a quart of water.—*Modern Bee-keeping: a Handbook for Bee-keepers.*

BRITISH BEE-KEEPERS' ASSOCIATION.

THE RELATION OF BEES TO FLOWERS.

[The following lecture was delivered by Mr. F. Cheshire, at the Quarterly Conversazione of the British Bee-keepers' Association, in the Conservatory at the Royal Horticultural Gardens, South Kensington, July 27th, 1880. The lecture was illustrated by large diagrams, to which the report, for the sake of clearness, does not refer, but figures are added which relate to the diagrams published by the Association.]

If we take our stand before a flourishing hive of bees on a fine day in summer, we shall note crowds of busy workers settling on the alighting-board, as they return from their excursions in the fields, whilst they bear upon their hind-legs pellets of pollen of various colours. Could we follow them as they enter we should find, in almost every instance, that this visible load is not all they carry, but that, having freed themselves of this, they proceed to empty from a false stomach the nectar gathered also from the blooms, and which, when thickened by evaporation, we call honey. Two questions may now be asked,—Why do the bees gather these two substances, and why do the blooms supply them? The answer to the first every bee-keeper would readily give: These form the food of the whole community, although pollen is principally needed by the growing larvæ. To supply the answer to the latter interrogative, Why are the wants of the bee supplied by the flower? is the object of our gathering this evening.

Plants bloom in order that seed may be produced and perfected, and the race continued. But before seed, in the true sense, can be produced at all, pollen, which is borne by the anthers, and which we all have noticed, by example, in the lilies as an abundant orange-coloured dust, must be placed upon a certain special part of the flower called the stigma. Should the pollen be of a suitable kind and the stigma in a receptive condition, a delicate thread, known as the *pollen tube*, is thrown out by the pollen-granule through the stigma into the seed-vessel, by which the seed becomes fertilised, and, when mature, capable of germination. The great majority of flowers possess both anthers and stigmas, they carry the two sexes within themselves; and we might suppose that this being so the form of the flower would secure the transmission of its pollen to its stigma in order that the end of its being might be certainly accomplished. So thought the older botanists, and were in consequence much puzzled in explaining the reasons for the forms of the blooms they examined. The genius of a few modern investigators has, however, shown that flowers, generally speaking, are especially formed to *prevent* fertilisation by the pollen they themselves produce, while marvellous contrivances are exhibited to secure pollen from some other plant or flower. For, amongst those that have been studied in reference to this matter there exists but a very inconsiderable number of real or apparent exceptions; whilst the latter, under renewed examination, are not infrequently affording delight, as they are found to possess some previously unsuspected adaptation to *cross fertilisation*, which in occasional instances, especially amongst the orchids, is so droll as to sound rather like the outcome of a rampant fancy, than a narration of sober fact. I am not unmindful of the cleistogamous blooms produced by some plants, in which the pollen is shed by the anther immediately into its stigma. These blooms are quite outside the question before us, but had we time to examine them we should find they rather represent an abnormal, than the normal method of reproduction. The protest of nature then, made for some profound, perhaps inscrutable reason against in-breeding, applies no less to plants than to animals. But blooms are fixed. How is the all-needful fertilising dust to be carried from one to the other? For some the work is done by the wind. Pollen is formed in countless millions of granules, and

carried, at its proper season, by every breath of air to the stigmas made branched and hairy to increase the chance of grasping it as it travels past. But with by far the greater number the insects are looked to to bring about those unions which without them would never be effected. And amongst insects the bee especially has been made the complement of the bloom, the love-messenger of the little beauties of our woods and fields, supplying the eyes, legs, and wings, which to the flower itself have been denied. As, then, the visit of the insect is essential to the existence of most plants, the flower secures that visit by spreading a banquet. Pollen, it is true, is necessary for blooms themselves, but the amount produced is always enormously greater than that required for mere fertilisation, and the excess is the flesh-forming food of the pollen-gatherer, while honey, the heat-and-force-forming food, sograteful to the insect's palate, is produced *entirely* for its benefit. Thus, then, insects perpetuate flowers, and flowers continue the existence of insects, both being but mutually sustaining parts of one great whole.

In referring now to examples of the general principles enunciated, let us commence with the Dianthus as especially appropriate, since we have been to-day favoured by a great show in the adjoining corridor of pinks and picotees. When this bloom opens it first displays its five anthers, which mature, shed their pollen, and then fade away. The bloom might have been visited many times for honey, and the pollen all carried off on the hairy breasts of the honey-seekers, but fertilisation could not have been effected because the stigma is not as yet developed, but the fading of the anthers is the signal for its appearance. Its receptive surface now occupies the very position in which the anthers previously stood whilst dusting the breast of insect visitors, and so it waits to receive upon its sticky face pollen brought to it from some younger flower whose anthers are at this time emptying themselves. This device for securing cross-fertilisation is one of the most frequent, and blooms which employ it are said to be proterandrous, *i.e.* the anthers are mature before the stigma. Another example, to which Mr. Ingram last year drew our attention as being an abundant honey-producer, is furnished by the *Epilobium angustifolium* (34 and 35), which at first throws forward its anthers but recurves the style upon the extremity of which the stigmas are placed. Their immaturity, their faces being closed up together, and their position, make fertilisation quite impossible. But in two or three days the anthers will have shrivelled and the style straightened, while the four stigmas will have expanded waiting for pollination from the hairy breast of bees flitting from some younger bloom. Almost every garden contains its *Tropæolum majus* (39, 40), the gay flowers of which expand before the anthers are well developed. The latter now hang down, but one after the other they mature, raise themselves into such a position that a bee gathering honey from the spur must wipe off the liberated pollen. As the work of each anther is completed the filament upon whose end it is supported bends down and so gives place to others. When all have fulfilled their office the style lengthens and brings the stigma into the position the anthers had by turns occupied, when, of course, cross-fertilisation occurs in the manner I have already explained in relation to the pinks and *Epilobium angustifolium*. The geranium and pelargonium of the conservatory furnish to the hand of us all nearly throughout the year examples of proterandrous flowers, a careful inspection of which will enable us to note the different phases of the life-history of those blooms to which I have called attention.

But it is not always that the anther is the first to mature. In many, though in far fewer instances, the stigma is receptive, and receives fertilisation before the anthers have commenced to shed pollen. Of this we have an example in *Scrophularia nodosa*—(41, 42, 43)—a plant not without a reputation amongst bee-keepers on account of the honey it supplies. The stigma presents itself immediately over the lip of the young bloom, and bees having been dusted by pollen in their visits to those that are older in a manner we shall presently see, as they reach in after honey, transfer this pollen from their hairy breasts to the sticky stigmatic surface. Cross-fertilisation having been secured, the stigma shrinks, and the style droops, while the anthers, which previously had been hiding in a manner which almost looks like humour, in a pouch-like form, given to the front of the bloom for their accommodation in their moments of bashfulness, now rise into view, take the place whence the stigma has retired, and begin to shed their pollen. But the busy bee plays its part, carrying away the honey in its sack, and the pollen on its chest, while of necessity it disposes of some of the latter in fertilising younger blooms, as I have already pointed out.

We shall now consider a device of a totally different character. An examination of a bunch of primroses (36, 37) gathered promiscuously will show that the blooms are of two kinds. In one the anthers stand at the top of the corolla-tube, in the other the stigma occupies that position. If the flowers be torn open we shall, half way down the tube, find in the former the stigma, and in the latter the anthers. If bees seeking honey travel about amongst these two forms they will clearly get the root of the tongue coated with pollen from the first form, which they must transfer to the stigma of the second form; whilst the anthers of the second form will apply their pollen to the centre of the tongue, the accurate position for transferring it to the stigma of the first. Not only here then does each bloom seek pollen from some others, but the arrangement of its parts is such as to suit it to fertilisation only by pollen produced by a bloom of the complementary form, *i.e.* by pollen produced not only upon another flower, but upon a distinct plant. The pollens produced by the two kinds are far from identical, and each by experiment has been proved to have special suitability to the form of bloom for which it has evidently been intended. The wonders of these dimorphic flowers are far exceeded by those where three forms exist, as for example, in the *Lythrum Salicaria*, around which Darwin's researches have gathered so much interest.

The labiate flowers are amongst the most attractive to bees; they commonly have strong perfumes, while their honey is pronounced in flavour; but their curious forms and adaptations to crossing place them amongst the most interesting to bee-keepers, who are also students of nature. Let us examine one of these, selected on account of its structure. The *Salvia officinalis* (44, 45) has but two developed anthers; the others are aborted. The filaments of these are very short, while the two cells of the anther, which are usually quite close to each other, are here widely separated by an unusual development of the '*Connective*.' This 'connective' may be said to be hinged to the extremity of the filament. When the bee enters, the lower anther-cells, which produce no pollen, but answer the purpose I am now explaining, are pushed forward by the advancing head and thorax, these two cells actually fitting over the front of the insect much as a horse's collar sets upon his chest. The connectives now turn upon their hinges, and throw the other anther-cells over upon the bee's back, and there fix patches of pollen. As the bee retires, the old position is taken, so that the trick may be repeated upon the next visitor. When the anthers wither, the flower by the growth of its style, brings the stigma into just the position into which the pollen-bearing anther-cells were brought by the action of the bee, which insect in due course, in its honey seeking, applies its back, bearing the pollen given to it by a bloom in its earlier condition,

to this stigma, and so brings about in a most singular fashion the crossing required.

The heaths, so important on account of the large quantities of honey they yield, give it all in order that they may obtain possible fertilisation. The anthers open by pores in their sides, but the pollen cannot escape since the anthers stand against each other, and so mutually close the apertures; but every anther is provided with a couple of processes like horns, which stand out in the body of the tiny wax-like bell. The bee's head is too large to enter, but its tongue is long enough to reach the honey; as it passes upwards to this, however, it strikes the horns and moves the anthers, and as a consequence the pollen falls, and is received upon the head of the bee, a position in which it must be applied to the stigma of the next heather-bloom visited, since the stigma occupies a central position at the entrance to the bloom.

It would be unpardonable to omit altogether the wonderful order, Compositæ; and I select the Cineraria (38) as a plant commonly to be found in our homes, and which we may at any time study in a spare moment. These Composite blooms vary somewhat in their structure, but a little patience will enable us to understand all when we have really conquered one. The explanation I am about to give of the Cineraria, for instance, would apply almost entirely to the daisy or sunflower, and with but slight alterations to the dandelions, thistles, marigolds, chrysanthemums, &c.

Each anthodium, popularly called a flower, really consists of a considerable number of blooms or florets gathered into a unit. If we examine one of these, as we find it in the Cineraria, we shall discover that the central convex part is formed by the extremities of perhaps 150 florets closely packed together. These are in different stages of development, the youngest occupying the centre of the anthodium. As we proceed from the centre we come to florets just opening, and still further from the centre are others, more matured, having a stick-like arrangement growing out of, and rising above, their corollas. These are the anthers, which are joined to one another by their edges (*syngenesious*). The pollen has been shed, but since by their junction the anthers form a closed tube none has yet escaped. In the ring of florets again beyond these we shall observe probably the next stage. Here the pollen is showing at the top. The style has grown up under the pollen, and having a brush on its extremity, has actually swept the pollen out from between the anthers. Insects now carry it away, but fertilisation cannot yet be brought about in the floret yielding it. Passing again outwards, we find florets with their pollen all gone, and their styles standing out above the corollas. The stigma now develops, and pollen can be received, but this pollen must of course be provided from some younger floret, or even by some distinct anthodium. The external florets carry each a wide, long ray, which together make up the outside conspicuous surface of the bloom, increasing its charm in the eye of the florist, and making it more conspicuous so as to attract insect life. These outside florets produce no pollen, and so singularly have no brush on the end of the style; and this is not all, for with that marvellous beauty of economy we so often are able to trace in the Creator's works, pollen is not found here, because here it would not be of value to the plant; for, from what we have already seen, this fertilising dust, if not passed from one anthodium to another, must be used on a floret farther from the centre than the one producing it, from which it is clear that pollen on the outside row would be produced in vain.

The orchids have always been objects of wonder, but never have they attracted more attention than at present, and the investigations made have revealed devices, as I have already hinted, which appear to the last degree romantic.

The one example chosen of a British species (*Orchis mascula*) is more sober in its behaviour than some which could have been selected, but it will furnish a sort of type for many, and so has its advantages. The pollen is here gathered into two masses called *pollinia*. When the flower is visited a fissure occurs in the covering of these pollinia, and sticky bases which they possess are made bare. As the bee remains upon the lip of the bloom seeking honey, these sticky bases are in contact with her head. The viscid matter quickly sets, and when the bee retires the pollinia are so firmly fixed that they are drawn out of their cases, and carried away like two erect horns. As she flies through the air with her whimsical decoration, an uneven contraction of the pedicel of each pollinium alters its position, so that in a few seconds they are found standing directly forward in front of the head, and ready to pass at once into the next bloom as the bee enters, and so striking the stigmatic surfaces, and effecting cross fertilisation.

In such a consideration of our subject as the present, the action of bees as fertilising fruit blooms, and so actually instrumentally producing fruit, ought not to be altogether omitted. If we examine a strawberry we find a vast number of (popularly) seeds, (really) *achenia* studding its external surface. Every one of these possessed a style and stigma, and has had pollen conveyed to it by the action of insects, bees mainly. When the bee settles in seeking for honey it walks round the bloom, and so rubs off on to the stigmas the pollen brought from some other similar flower (for the stigmas are receptive before pollen is produced), but if any one stigma remains unfertilised, the fruit fails to develope at that part, and continues hard, shrunken and green when the rest (the fertilised portion) is fully ripe. We must all again and again have seen illustrations of this; from which we learn that every strawberry requires from one to two or three hundred distinct fertilisations for its production. The raspberry and blackberry are similarly dependent upon bees. Each little rounded mass of these fruits—called a *drupel*—has been independently fertilised. If we take a green raspberry, and look at it with a hand-magnifier, we shall find the withered style and stigma remaining in every case; and indeed they are frequently traceable when the fruit is fully ripe. Some drupels, withered and greyish-green in colour, may often be seen in the dessert dish, and marking a point where the bee has failed in her work, and proving conclusively that without her, or some other insect, the blooms would have become blind, and no fruit at all would have followed. The gooseberry wholly depends on insects. Its anthers are ripe before its stigma, and fertilisation without insects is impossible.

The apple and pear no less require insect visits, and each one demands, as its bloom has five distinct stigmas, five separate fertilisations. An apple often develops, though imperfectly, if four only are effected, but it generally drops before ripening. Such a fruit may be usually known by a deformity, one part has failed to grow; and if we cut it across with a knife one of the five divisions (*dissepiments*) of the perfect core will be found wanting.

Some complain that bees eat fruit, a charge which need not here be rebutted; but it is for us to proclaim that while they gather honey for the benefit it may be of their masters, they confer a no less benefit on the fruit-grower by giving him a crop in return.

I fear to weary, but before sitting down beg a few moments to point out that the sense of smell possessed by the bee, of which we have constant evidence, and that appreciation of colour which Sir John Lubbock has proved, have been important elements in developing the beauties of the floral world. Man has long, by hybridizing and selecting, been improving flowers; but where men have worked for seasons bees have worked for ages; and, although unconsciously, still on the same lines.

Those flowers that have had more than usual sweetness of perfume or brightness of colour have been more surely visited and fertilised; and since the characteristics of the parents would be repeated and occasionally intensified in the progeny, every movement towards the beautiful has been by the bee perpetuated, while from the same cause the less desirable has had less chance of being preserved alive upon the earth.

The Chairman, having adverted to the valuable educational lessons derivable from the interesting lecture of Mr. Cheshire, proposed that a vote of thanks should be tendered to him, which was cordially agreed to by the meeting.

BRITISH BEE-KEEPERS' ASSOCIATION.

Committee meeting held at 105 Jermyn Street, on Wednesday, August 18th. Present, Mr. J. M. Hooker in the chair; Dr. Lionel S. Beale, Mr. F. Cheshire, and Rev. H. R. Peel, Hon. Sec. The minutes of the last meeting were read and confirmed. The balance-sheet for the month ending July 30th was also read, showing a balance in hand of 56*l.* 7*s.* 6½*d.*, It was resolved that the pamphlet entitled *Modern Bee-Keeping* should be sold at the price of 40*s.* per hundred copies if not less than 200 were were taken, and at 35*s.* per hundred if not less than 250 were taken, and that advertisements for the next issue should be solicited from florists, seedsmen, and others connected with horticulture. It was resolved that two pages of the advertisement sheet should be devoted to the list of publications, and prices of the various works published by the Association. It was also resolved that any non-members purchasing not less than 5 copies of the diagrams be allowed to have them at 5*s.* per set, the same price as charged to members.

Letters were read from Mr. Duncombe and Colonel Donnelly of the Science and Art Department, and ordered to be placed on the minutes.

HERTFORDSHIRE BEE-KEEPERS' ASSOCIATION.

The third Annual Show of the Hertfordshire Bee-keepers' Association was held on Friday and Saturday, August 20th and 21st, at Gorhambury Lodge, St. Michael's, near St. Albans, by the kind permission of the Earl of Verulam, President of the Association. In connexion with the Show was held the County Flower, Fruit, and Vegetable Show. The attendance of the band of Grenadier Guards under the direction of Mr. Dan Godfrey, the auspicious weather, and the quantity and quality of the exhibits, contributed to make the combined shows a grand success. The Hertfordshire Bee-keepers' Association have good reasons for congratulation in having so energetic and enthusiastic a Secretary as the Rev. Herbert R. Peel, seeing that, through the exertions put forth by that gentleman, the number of its members far exceeds that of any other County Association, and by the employment of travelling experts penetrating to the furthest limits of the county, the cottagers in all the various villages are reached and instructed in the art and mysteries of bee-keeping. The results of these efforts were visible in the large number of visitors, of all classes of society, on both days of the show, and in the intelligent interest taken in the proceedings. T. W. Cowan, Esq. of Horsham, and the Rev. J. L. Lisson, Edingthorpe Rectory, North Walsham, Essex, were the judges of the county classes; and the Rev. Canon Kewley, Baldock, and the Rev. Mr. Wilcox, of the open classes.

The honey exhibits were highly creditable. There was a beauty, a transluscence, and a deliciousness in the run honey which indicated the pains which had been taken by the exhibitors; while the clearness, the evenness, the attractive appearance, and the excellence of the honey in sections, bore evidence of the readiness of the exhibitors to profit from, and adopt, the teachings afforded by our Transatlantic brethren; and we have reason to hope that, now the best method of marketing honey has been attained, an amount of honey will be produced by the bee-keepers of the United Kingdom from the vast tracts of country where at present its rich fragrance is lost in the desert air, which will enable us to dispense with honey imported from abroad, and develope in our midst a new industry and a fresh occupation beneficial alike to the cottager and to the farmer. It would be invidious, where there was so much of excellence, to specify any individual exhibits; but we cannot refrain from expressing our delight at witnessing those of Mr. S. Thorne, Mr. E. Bacon, Miss Gayton, Dr. Smith, Rev. H. R. Peel, Col. Smyth, and Mr. Gulston. Some splendid Stewarton supers were exhibited by Rev. J. Jenkyns and Rev. E. Bartrum. The specimens of bee-flora exhibited by Mr. Gibbs of St. Albans, were very creditable. The exhibits of bees-wax by Miss Gayton, Mr. Thorne, and Mr. Clapp, deserve commendation.

The Hertfordshire Show treading so closely on the heels of the South Kensington, it could scarcely be expected that any novelty would be shown in the provincial that was not to be seen in the metropolitan show. We are bound, however, to make an exception in favour of some specimens of comb-foundations exhibited by Abbott, Brothers, obtained from impressions of wax-foundation in plaster of Paris. They appeared as perfect as the best foundations furnished by Mr. Raitt; and if capable of being made in larger sizes and of greater thickness than those exhibited, the invention will prove a formidable competitor to the American machine-made comb-foundations.

The manipulations in the Bee Tent were a great source of interest to the visitors. These exhibitions of the mastery of the experts over the bees are of high educational value. It may be advancing a heterodox opinion, but it seemed to us a question whether the object of the exhibition would not have been better attained by the absence of prizes for those capturing the queen and transferring the contents of the skep to the bar-frame hive in the shortest period of time. The 'hot haste' and the excited hurry displayed by the competitors have an injurious effect on the minds of the spectators, who can scarcely avoid falling into the excitement of the moment, and witnessing a rapid race between the competitors, instead of being the sober and calm recipients of a valuable lesson. The prize-takers in the contest were Mr. S. J. Baldwin and Mr. W. Martin, who captured the queen and transferred the comb in the skep to the bar-frame in ten and eleven minutes respectively, while one of the competitors, Mr. R. Baldwin, did not succeed in capturing her majesty, and in searching for her and in transferring occupied thirty-two minutes; yet the more composed and deliberate method adopted by him permitted the spectators to follow his actions more closely and to have the desired educational lesson more deeply impressed on their minds and memories. Mr. H. C. Finch, of Rickmansworth, and Mr. G. Henderson, of Ealing, were the judges of the manipulations. At five o'clock the prizes were given away by Lady Jane Webster.

The Hertfordshire Association may feel assured that for the short time it has been in existence a good and a great work has been done in the county; and we hope that the time is fast coming when, through its exertions and those of kindred institutions, the skep will 'hide its diminished head,' and when all antiquated practices of taking honey will be abolished.

CALEDONIAN APIARIAN ASSOCIATION.

This Society held its Seventh Annual Show of honey, hives, and bees to the left of the entrance-gate, within the Highland and Agricultural Society's show-yard. The exhibits in the show-tent this year, although not so numerous as on some previous years, show a marked improvement in the science of apiculture. The centre

of interest to strangers was, as on other occasions, the observatory hives, where the Ligurians and the Blacks were seen working side by side.

Among the observatory hives was one exhibited by Mr. D. Wood, of Benmore, Argyllshire, which proved an object of great interest to all who entered the tent. Indeed, so great at times was the eagerness evinced, that the people climbed on to the tables, and pressed around in such numbers as to endanger the safety of the hive. It is an attempt to solve the difficult problem of constructing a hive suitable for winter or summer, indoors or out. We have had ample opportunity of seeing the hive at work under various conditions, and were more than pleased with its completeness and thorough adaptability for all purposes of bee-culture. When we first saw it Mr. Wood had but just introduced two bars from one of Neighbour's hives taking a few bees along with the queen, and had taken it away into a field some distance from his home to break the bees off their old flight, and they were then working admirably. We have quite recently seen it indoors, and found the bees not only healthy but prospering. The queen was still busy depositing young, and several of the combs contained a large quantity of sealed brood, whilst all the other frames were being rapidly filled with new comb and honey. The hive consists of seven bars having comb space 13½-in. by 10½-in. They are so constructed as to slide in so as to form a compact square hive when not needed for observation. The foundation of the hive is formed by a single piece of board, through which seven holes are cut over a common entrance-chamber, and these afford direct entrance into each bar, thus doing away with all long tunnels and obstructions. Into the floor-board channels are cut to receive hollow slides, which are closed at the outer end. When the bars are drawn out these slides are drawn along with them, and are brought exactly over the entrance-chamber, thus preserving uninterrupted communication; before drawing out arrangements are made by the means of a simple slide, easily got at, to close off the entrance in the centre of bar, another entrance formed at the end of bar by being drawn out, is brought over the opening, thus the bees' egress and ingress is never interfered with. Close to the two outside slides are two pillars supporting a strip of wood, through which seven holes are bored. These correspond to holes made in the ends of the bars, and by passing a piece of stout wire down through the strip, bars, and floor-board, the whole can be moved backward and forward at pleasure, somewhat after the style of Mr. Wilson's ingenious hive, but minus its tunnels. Another and most interesting feature in it is that every bar can be drawn out at pleasure, and be quite detached from the body or entrance-chamber (each bar closing its own entrance automatically), thus rendering it possible to make the very closest inspection without a single bee escaping, or in any way irritating them: indeed, so quietly and smoothly is the whole operation performed, that the queen very often continues depositing eggs when the bar she may happen to be on is taken quite away from the remainder of the hive. In order to make it adapted for wintering each glass is made to slide out, so that when the bars are closed in the glasses can be drawn out, thus making it to closely resemble an ordinary bar-frame hive, and putting the bees in the very best condition for wintering. The bars fit so closely, and the edges of grooves and glass are so thin, that they occupy very little over 1¾-in. to each bar.

To render it still more comfortable a square cover is slipped over the whole, and it is then capable of withstanding all kinds of weather if it is thought desirable.

As we stated at the outset, it is an attempt to make an all-the-year-round observatory; and we think Mr. Wood has fairly earned the position he claims, that of putting that difficulty one step nearer solution by his ingenious and well-considered hive.

Two well-got-up Woodbury hives in glass cases were also much admired. Of greater interest to the bee-keeper, however, was the excellent assortment of hives and bee-gear exhibited, showing all the most recent improvements, several of which have not hitherto been before the public. Mr. R. Steele, Fowlis, Dundee, deservedly carried off most of the honours in this department. It is to the enterprise of this gentleman, along with Mr. Thomson, Blantyre; Mr. Young, Perth, and others, that Scotland owes the rapid advancement in bee-culture that has been made of late years. Mr. Steele's collection of bee-furniture was quite a museum. It contained, amongst its thirty articles, a wax foundation machine, hives of all sorts and sizes, supers, honey extractors, &c. One of the best articles in the tent was the extractor belonging to this collection, invented by Mr. Cowan. This is evidently the extractor of the future.

The display of honey, especially the 23 lb. super, made up of 1 lb. sections, was very creditable.

The following is the prize list:—

Clover or Flower Honey.—For the best super, above 10 lbs. and under 20: W. Sword, Falkirk. For the best sample of run or extracted honey, not less than 4 lbs., to be exhibited in glasses: 1, C. Carnegie, Maryhill, Montrose; 2, C. Carnegie; 3, J. Thomson, Dalbeattie. Highly commended, R. Steele, Fowlis. Special prize, offered by Mr. R. J. Bennett and Mr. Wm. Sword, for the best exhibition of pure honey in sectional supers, each section to be separable, and not more than 3 lbs. each; the total weight of each entry to be not less than 12 lbs.: R. Steele, Fowlis.

Hives and Wax.—For the best hive for observation purposes, all combs to be visible on both sides, stocked with bees, and their queen: 1, J. Ellis, Bridge of Earn; 2, D. Wood, Benmore; 3, J. Welsh, Kinghorn. For the best and most perfect bar-frame hive, with super, or set of sectional supers, and cover complete for summer use: 1, R. Steele; 2, D. Wood. For the most perfect hive on the storifying principle, with the best arrangement for securing harvest or comb honey: R. Steele. For the best hive, complete with summer and winter arrangements: 1, R. Steele; 2, D. Wood. For the best straw hive of any description: V. Novitzky, Pitlochry. For the two best samples of wax, in cakes of not less than 1 lb. each: 1, R. Steele; 2, W. Langhland. For the best sample of wax guide-sheets, not less than six sheets: 1, R. Steele; 2, W. Raitt, Blairgowrie. For the best bar-frame hive, in the moveable comb principle: J. Ellis.

Comestibles.—For the best liqueur or wine made from honey, with recipe attached (not less than two quarts); age of wine to be given: J. Wilkie, Gourock. For the best cakes made with honey, with recipe attached, not less than 2 lbs.: 1, J. D. Hutchison, Glasgow; 2, J. Ellis, Bridge of Earn; 3, J. Scott, Falkirk.

Miscellaneous.—For the best collection of hives, bee furniture, bee-gear, not to exceed 30 articles, and no two articles to be alike, or for the same purpose: R. Steele. For the best bee feeder: 1, D. Wood; 2, J. Ellis; 3, R. Steele. For the cheapest, neatest, and best supers for producing honey-comb in a saleable form, and to be complete with glass: 1, R. Steele; 2, ditto. For the best wax extractor, cost to be taken into consideration: R. Steele. For the best honey extractor, cost to be taken into consideration: R. Steele. For the best and most interesting collection of natural objects, models, or diagrams connected with apiculture, and illustrating the natural history and economy of the honey bee: No entries. A silver medal was awarded for water fountain, exhibited by Mr. Bennett, and invented by J. M. McPhedran, Craigbet, Renfrewshire.

On Wednesday a 'manipulation' tent was erected adjoining the exhibition, and here from time to time during each day interesting manipulations with live bees were carried on, by which the uninitiated are acquainted

with the method of taking the honey without resorting to the destruction of bees. A gauze screen, through which the whole operations can be witnessed, protects the visitors from the attacks of the busy little creatures.

The driving competition took place on Friday for the Highland and Agricultural Society's Silver Medal, and was gained by James Johnstone, Touch, via Stirling. He drove the bees and captured the queen all complete in less than 7 minutes.

DORSETSHIRE BEE-KEEPERS' ASSOCIATION.

The Bee Show at the Alexandra Gardens.

The Dorsetshire Bee-keepers' Association hold their annual exhibition at the Alexandra Gardens, Weymouth, in connexion with the Weymouth Horticultural Society's Flower Show on August 11th, and a spacious tent was set apart for the numerous entries. There were about 40 prizes offered, ranging in value from 1*l.*, to 2*s.* 6*d.*, in addition to silver and bronze medals given by the British Bee-keepers' Association. The competition was excellent, there being seventy-four entries, and the various exhibits were admirably arranged under the superintendence of the honorary secretary, Mr. W. H. Dunman, jun., of Troytown, near Dorchester, to whose efforts the success of the show is mainly attributable. The principal competition in the open classes was for hives, and the leading exhibitors were Messrs. Abbott, of the School of Apiculture, Southall, and Messrs. Neighbour, of High Holborn and Regent Street, London, who sent specimens of some of their best work. Messrs. Abbott and Neighbour also sent large and varied collections of apicultural appliances—feeders, smokers, supers, queen excluders, section frames and crates, comb-foundation, queen-cages, bee-veils, English and American bee books, &c. Two local hive-makers entered for competition—namely, Mr. J. Cox, of Whitchurch, with a slight modification of the Cheshire frame-hive; and Mr. R. Legg, of Buckhorn Weston, with straw skeps. Both hives were well made, but call for no special mention. The exhibition of honey in the comb was simply splendid; but the principal competition was really confined to three persons—namely, Mr. W. H. Dunman, jun., Troytown; Mr. Antell and Mr. Stickland, Puddletown, who have carried all before them for three years past at Sherborne and Dorchester. They contributed a very large weight of honey of the choicest description, and all in a very marketable form, most of it being in sections weighing one, two, or three pounds each. The sections were well filled with beautiful straight comb, most of which was sealed from top to bottom and end to end, without a spot of pollen or brood. The weights taken from single stocks ranged from 89¼ lbs. to 68 lbs. while from a single apiary as much as 334 lbs. was sent. The competition was so close that the judges awarded 'equal' prizes in more than one instance. There was plenty of run honey in glass jars, the colour and quality varying from the delicious nectar of the white clover to the darker and coarser kinds gathered from limes and heather. Both comb and run honey sold freely at 1*s.* to 1*s.* 6*d.* per lb. The leading exhibitors were all disciples of the bar-frame school. The principal 'skeppist' who exhibited was Mr. M. H. Tilley, of Dorchester, who, like his neighbour, Mr. Vatcher, is a disciple of Mr. Pettigrew, and is still quite content with the results obtainable under the old system. He uses enormous straw skeps and very simple frame hives, ranged tier above tier in a large bee-house, and gets some splendid supers, his harvest this year being probably half-a-ton, while his total weights from single hives would not be far behind those of his more advanced brethren. Unfortunately, very few cottagers exhibited, and the Association has yet much to do in the way of educating the labourer in the methods of modern bee-culture. The observatory hives sent by Mr. Dunman and Captain Downes were sources of great delight to visitors. The judges in this department were:—Rev. L. Stanton, Combe Keynes Mr. C. Tite, Yeovil; and Mr. W. R. Vatcher, Dorchester. Their awards were as follow:—

Local Classes.—Best super of honey from one apiary—First 1*l.*, Mr. W. H. Dunman, jun., Troytown, Dorchester; second, 10*s.*, Mr. J. Antell, Puddletown; third, 5*s.*, Mr. T. Stickland, Puddletown; commended, Rev. T. A. Greaves, Weymouth. Best exhibition of super honey in the comb from one stock of bees—First, Mr. J. Antell, 89¼ lbs; second, 10*s.*, Mr. W. H. Dunman, jun. 86 lbs; third 5*s.*, Mr. T. Stickland, 69 lbs; highly commended, Mr. W. H. Dunman, jun., 68 lbs. Best super of honey, not sectional—First, 10*s.*, Mr. M. H. Tilley, Dorchester; second, 5*s.*, Mr. W. H. Dunman, jun.; commended, Mr. J. Sherring, Puddletown. Best exhibition of comb honey in sections—First, 1*l.*, equal first, Mr. T. Stickland and Mr. J. Antell; second, 5*s.*, Mr. W. H. Dunman, jun. Best eight sections of comb honey—First, 15*s.*, equal first, Mr. T. Stickland and Mr. W. H. Dunman, jun.; second, 10*s.*, Mr. J. Antell. Best collection of comb honey—Silver medal of the British Bee-keepers' Association, Mr. W. H. Dunman, jun.; bronze medal ditto, Mr. J. Antell; certificate, Mr. T. Stickland. Best exhibition of run or extracted honey in glasses—First, 10*s.*, Mr. T. Stickland; second, 5*s.*, Mr. W. H. Dunman, jun.; third, 2*s.* 6*d.*, Mr. J. Antell. Best sample of bees' wax—5*s.*, Mr. J. Sherring.

Cottagers' Classes.—Best exhibition of comb honey in supers—First, 5*s.*, Mr. J. Sherring; second, 2*s.* 6*d.*, Mr. James Woodland, Troytown. Best super of honey—First, 7*s.* 6*d.* Mr. J. Sherring; second, 5*s.*, Mr. James Woodland.

During the afternoon Mr. C. Tite, of Yeovil, gave a series of short lectures to small groups of interested listeners who were anxious to know something about bees and their habits, as well as the advantages claimed for the modern mode of bee-keeping.

The extractor was a source of very great interest, and one of Abbott's 'Little Wonders' was kept at work during a considerable portion of the time the show was open, Mr. W. H. Dunman, the indefatigable secretary, using his muscles and his tongue very freely in connexion therewith.

Mr. M. H. Tilley and Mr. W. R. Vatcher, of Dorchester, who are members of the committee of the Dorset Bee-keepers' Association, answered a host of questions and gave much interesting information respecting bees and their management, as also did Messrs. Antell and Stickland, of Puddletown.

SURREY BEE-KEEPERS' ASSOCIATION.

This association held its second county show on Wednesday and Thursday at Croydon, the disused Skating Rink forming a suitable place in which to hold the exhibition. The show comprised bees, honey, and apiarian appliances of all kinds. Messrs. Neighbour gained first prize for the best complete frame-hive, and also a prize for straw hives. Among the other exhibitors of all kinds of appliances, honey, bees, wax, &c., were Messrs. S. J. Baldwin, Norwood; J. Wood, Croydon; D. Smith, Croydon; Mrs. Wayling, Croydon; Mr. A. Stone, Croydon; Mrs. M. A. Harrison, Croydon; Mr. W. Hollands, Croydon; Mr. R. McGregor, Aberdeen; Mr. S. Sells, Stamford; Mr. P. Skinner, Swanley; Mr. F. Mace, Sutton; Mr. R. Scott, Godstone; Mr. J. Fowler, Sutton; Mr. M. Wood, Godstone; Mr. W. Marriott, Woodside Green; and Mr. Lemare, Guildford. The most successful exhibitor was Mr. Hollands, while Mr. Scott, Mr. Wood, and Mr. Baldwin took several prizes.

The driving competitions were subjects of much interest. The competitions took place in the gauzed tent of the Society, which enabled the timorous spectator to watch the contests without fear of being stung. In the Bee Tent, also, various manipulations were performed with live bees by Captain Campbell and other gentlemen. These manipulations were accompanied by popular lectures or explanations. The method of extracting the honey without destroying the comb was fully shown and explained.

At eight o'clock on Thursday evening the prize distribution took place, the ceremony being performed by Bishop Tuffnell, vicar of Croydon, who was supported by Captain Campbell, and Messrs. Lemare and Whealler, all three of whom had been untiring in their exertions to make the show a success.

The following is a list of prize-takers:—

Bees.—For the best stock of bees in a frame-hive, with sectional supers in process of filling: 1st, Mr. S. J. Baldwin, Norwood. For the best stock of bees in a bar-frame hive: 1st, J. Wood, Croydon; 2nd, D. Smith, Croydon; 3rd, Mrs. Wayling, Croydon. For the best stock of bees in a straw hive: 2nd, A. Stone, Croydon; 3rd, Mrs. M. A. Harrison, Croydon.

Hives and Appliances.—For the best complete frame-hive. The hive to be exhibited in duplicate—firstly, for summer use, with facilities for harvesting honey; secondly, with arrangements for wintering: 1st, G. Neighbour & Son, Regent Street, London; 2nd, W. Hollands, Croydon. For the best double-walled bar-frame hive for cottager's use, complete, with water-tight cover, sectional supers, quilt or blanket, feeding-stage, and bottle. To be painted. Price not to exceed 15*s.*: 1st, W. Hollands, Croydon; 2nd, R. McGregor, Aberdeen. For the best and cheapest frame-hive for cottager's use, with summer and winter arrangements. Price not to exceed 10*s.*: 1st, R. McGregor, Aberdeen; 2nd, W. Hollands, Croydon; highly commended for simplicity, H. Parson, Guildford; highly commended for cheapness, F. Lyon, Harleyford Road, S.E.

Straw Hives.—For the best and cheapest straw hive, with flat top, adapted for sectional supering; a hive that shall be intermediate between a bar-frame and common straw: 1st, T. Sells, Uffington, Stamford; 2nd, G. Neighbour & Sons, Regent Street, London.

Supers.—For the cheapest, neatest, and best supers for harvesting honey in the comb, in the most saleable form. Applicable to wooden or straw hives, 1st, W. Hollands, Croydon; 2nd, and highly commended, Abbott Bros., Southall.

Extractors or Slingers.—For the best honey-extractor, calculated to meet the requirements of cottagers: S. J. Baldwin, Norwood.

Honey.—For the best exhibition of honey in supers, or sections of supers, the total weight of each entry to be not less than 15 lbs.: 1st, P. Skinner, Swanley; 2nd, F. Mace, Sutton, Surrey; 3rd, R. Scott, Godstone; highly commended, M. Freeman, Slinfold. For the best exhibition of honey in supers, caps, or sectional supers; the total weight of each entry to be not less than 8 lbs.: 1st, J. Fowler, Sutton, Surrey; 2nd, M. Wood, Godstone; 3rd, A. Stone, Croydon. For the best exhibition of comb-honey in sections, each section of not more than 3 lbs. in weight; the total weight of each entry to be not less than 10 lbs.: 1st, R. Scott, Godstone; 2nd, W. Hollands, Croydon; 3rd, W. Marriott, Woodside Green. For the best exhibition of comb-honey in sections, each section of not more than 3 lbs. in weight; the total weight of each entry to be not less than 5 lbs.; M. Wood, Godstone.

Run or Extracted.—For the best and largest exhibition of pure run or extracted honey in glasses (not exceeding 2 lbs. each): 1st, F. H. Lemare, Guildford; 2nd, W. Hollands, Croydon; 3rd, R. Scott, Godstone. For the best exhibition of pure run or extracted honey: 1st, M. Wood, Godstone; 2nd, J. Fowler, Sutton, Surrey.

Bees' Wax.—For the best exhibition of pure bees' wax: 1st, Mrs. Wayling, Croydon; 2nd, A. Stone, Croydon.

BEE AND HONEY SHOW AT MELKSHAM.

By the kind permission of the Keevil District Horticultural Society, a few of the leading bee-keepers of the neighbourhood were enabled to hold their first meeting in connexion with a grand floral fête at Melksham on August 11th. The display consisted of bees in observatory hives, super and run honey, wax, some of the most approved bar-frame hives, and a set of drawings illustrating the anatomy of the honey-bee. Special prizes were also offered for wasps' nests. The exhibits were all admirably arranged in a special tent, one side of which was covered with a network screen (kindly lent by Mr. C. N. Abbott, Editor of the *British Bee Journal*), through which, during the afternoon, upwards of a thousand persons interested in apiculture watched the processes of artificial swarming, extracting, and transferring.

The managers had secured the services of Mr. W. Hunt, of South Warnborough, a member of the B. B. K. A., who, with the assistance of Messrs. Adams and Childe, successfully demonstrated how tractable bees may become under proper management, and that the horrid brimstone pit is not only unnecessary, but cruel and extravagant if honey is required. The arrangement of the Show reflected great credit upon Mr. Robert Manfield, who is a most enthusiastic bee-keeper, and untiring in his efforts for the advancement of apiculture. Mrs. Manfield and other friends had tastefully adorned the tent, and the general effect was exceedingly pleasing. The Show was a great success for a first attempt. There was a good supply of honey, some of the finest being exhibited by a cottager. The awards amounted to 8*l.* 1*s.*, of which 7*l.* went to cottagers. The amount taken at the entrance to the tent was 10*l.* 17*s.* 5½*d.* Generous friends gave more than enough to pay the prizes and all other expenses, and a balance of 13*l.* will be handed to the Treasurer of the Cottage Hospital. This is not the first time Mr. Manfield has made bee-keeping help a good cause. Some of our readers will remember the account we gave three or four years ago of the manner in which he raised money for a church clock at Bere-Regis, Dorset, by the sale of his honey; and others will recollect what splendid supers he has exhibited on various occasions at the Dorchester, Sherborne, and Weston-super-Mare Shows.

We hear on good authority that bee-culture is making rapid progress in the district. Instead of burning their stocks, many cottagers now drive such bees as they still have left in skeps, and those they do not require for doubling, &c., they sell readily at 1*s.* 6*d.* to 2*s.* 3*d.* per lb. We append a copy of the balance-sheet made up after the Show referred to above, as the particulars may be useful to others who are thinking of getting up similar exhibitions:—

By subscriptions, 19*l.* 15*s.* 5½*d.*; admission fees, 10*l.* 17*s.* 5½*d.*; flowers sold in the tent, 3*s.* 1*d.*; total, 30*l.* 16*s.*; to printing, 2*l.* 9*s.*; advertisements, paper, and postage stamps, 18*s.*; Messrs. Hunt and Davis for manipulating, 1*l.* 0*s.* 6*d.*; Mr. Hunt's travelling expenses, &c., 1*l.* 6*s.*; bees for manipulations, 1*l.* 7*s.* 6*d.*; hire of tent, 2*l.*; man, for helping, 2*s.* 6*d.*; carpenter's bill, 11*s.* 6*d.*; prizes, 8*l.* 1*s.*; total, 17*l.* 16*s.* The judges were: The Rev. P. W. G. Filleul, Trowbridge; and Mr. Hunt, Warnborough. The following is a list of their awards:—

Observatory Hives, stocked with Italian bees.—10*s.*, Mr. A. Adams, Melksham. Observatory hives, English bees: 10*s.*, Mr. Clarke, Neston.

Cottagers.—Super honey, in comb: 15*s.*, Mr. T. Owen, Corsham; 10*s.*, Mr. Davis, Neston; 5*s.*, Mr. Bushell. Glass super of honey: 10*s.*, Mr. Pearce, Neston; 5*s.*, Mr. Clarke. Straw super: 10*s.*, Mr. Bryant. Sectional supers: 10*s.*, Mr. Clarke; 5*s.*, Mr. Pearce. Run or extracted honey, in glasses: 5*s.*, Mr. T. Owen; 2*s.* 6*d.*, Mr. W. Guy, Melksham. Hive of honey: 5*s.*, Mr. S. Rogers. Cake of wax: equal second, Mr. C. Bryant, Corshamside, and Mr. T. Owen.

Gentlemen's Gardeners.—Super of honey: 10*s.*, Mr. Clarke (gardener to Mr. G. P. Fuller); 5*s.*, Mr. E. Deverell (gardener to Mr. C. Webb, Trowbridge), and Mr. Button (gardener to Lord Methuen); 3*s.*, Mr. Gray (gardener to Rev. E. L. Barnwell, Melksham).

Open to all.—Super of honey: 10*s.*, Mrs. Moule, Melksham; 5*s.*, Mr. C. Webb, Trowbridge; 3rd, Mr. S. Bailey; 4th, Mr. Adams. Wasp's nest: 5*s.*, Mr. J. Hemmings, Sandridge. Mr. Cole, Melksham; 2*s.* 6*d.*, Mr. Crew, Corsham; 3rd, Mr. C. Homes, Melksham.

SHOW AT TIVERTON.

The Devon and Exeter Bee-keepers' Association held a branch exhibition on the 1st July on the Cricket grounds, in connexion with the Flower Show of the Tiverton Horticultural Society. There was a fair amount of exhibits, which were arranged in one of the Flower tents. On this occasion the Tent of the British Bee-keepers' Association was used for the manipulations, and much interest was taken by the visitors in the proceedings. The honorary secretary, W. N. Griffin, Esq., was assisted in the manipulations by George Fox, Esq., of Kingsbridge, one of the best known scientific and enthusiastic bee-keepers. The Judges were the Rev. W. J. R. Neame, and R. Veitch, Esq.

Somerton Show.—At the Flower Show held at Somerton, Somerset, on Friday, August 20th, there were a few very fair exhibits of comb and run honey, sent by Mr. P. C. Head, Mr. Sherwood, and others, who are doing their best to improve the method of bee-keeping in the district. There were also prizes given for the destruction of wasps' nests, the awards being at the rate of 6*d.* for each perfect nest sent in. There were 348 entered, one man named Ferguson sending 70, and thus gaining 1*l.* 15*s.* The number was very large, as wasps have been unusually plentiful at Somerton, as elsewhere, this season. The following were the prize-takers:—Supers of honey (hives given as prizes), 21*s.* P. C. Head; 7*s.* 6*d.* Wm. Snow.

ARBROATH SHOW.

The East of Scotland Bee-keepers' Society held their annual exhibition of bees, honey, wax, &c., in connexion with the Horticultural Society's Show in the Corn Exchange, Arbroath, on Wednesday, 25th August.

This exhibition shows decided progress in the get-up of honey-comb in a handy and saleable form. Although the white clover had partially failed this year owing to the heavy falls of rain in July, the show of honey from other sources, principally wild flowers, was good. The bulk consisted of small boxes or sections containing from 1 to 2 lbs. of honey nicely glassed to keep the honey-comb clean till wanted to cut out for the table—a vast improvement on the old wasteful skep system. The observatory hives, with their stocks of Ligurian bees and queen, were a great attraction. A nest of wild bees in a neat rustic cottage hive, exhibited by Mr. J. Nicoll, jun., Cemetery Lodge, attracted crowds of spectators. The judges were Mr. Bisset, Banchory, and Mr. Rogerson, Blairgowrie.

Prizes.—Best display of honey-comb, produce of one apiary, in sections not over 4 lbs., total weight to be not less than 40 lbs: 1, John Nicol, jun., Cemetery Lodge, 80 lbs.; 2, John Stewart, Letham Mill, 48½ lbs. Best sectional super under 20 lbs., sections not over 2 lbs. each: 1, John Nicoll, jun.; 2, John Stewart; 3, W. Raitt, Gowan Bank. Best single supers in wood or wood and glass: 1, George Greig, Arbroath; 2, R. Lowson, Arbroath; 3, John Stewart. Best straw super under 12 lbs.: James Glen, Arbroath. Six lbs. run honey in show-glass: 1, G. Greig; 2, D. Smart, Waulkmills; 3, James Glen. Best 2 lbs. wax: 1, John Nicoll, jun.; 2, Mrs. Stewart, Letham Mill. Six sheets comb foundation: 1, W. Raitt, Beecroft, Blairgowrie. Best observatory or unicomb hive, stocked with bees and their queen: 1, John Stewart; 2, Mrs. Stewart. Best sweetmeats made with honey, receipt attached, not less than 2 lbs., Mrs. Stewart, Letham Mill.

Correspondence.

*** *These columns are open to Subscribers, so that their queries, replies, correspondence, and experiences, may be* fully *and* faithfully *recorded; and for the discussion of all theories and systems in Bee-culture, and of the relative merits of all hives and appurtenances, that the truth regarding them may be ascertained. The Editor, therefore, must not be expected to coincide with all the views expressed by the various writers. All Correspondence is addressed to the Editor.*

CRITICISM ON WIDE-ENDED FRAMES.

I am glad you inserted my criticism on your proposed new frames, as I was afraid the *Bee Journal* was to become a close borough in which none but the member sitting in the Editorial chair was to be allowed to express an opinion. I do not know that it is worth while to say more on this subject, beyond that I stand to my criticism, that you having denounced the Woodbury for its liability to crush a valuable queen, and because of its large propolising surfaces, introduced frames in which both these evils are increased, and not diminished.

You say, 'There is not a word that we can discover that points to propolising as an objection in the sense our correspondent implies.' Is not having to prise the frames out of the notches such an objection, especially as the additional objection was alleged, that in doing this the dividing pieces between the notches were often broken away; a similar catastrophe to that which happens with your frames, when the projecting piece breaks off for the same reason?

You say that I have not used the patent bee-crushing frames, which is true in the letter; but I have a hive over which sectional supers are hung two deep in frames, touching one another; and I know the utter impossibility of seeing what is going on in the way of crushing when restoring such frames to their places; but this is not so objectionable as your proposal, because the queen being excluded there is no possibility of crushing her.

But I can quote a higher authority than myself. Cook (p. 141, 3rd Edition), speaking of the Quinby and Russel hives, says, 'The objection I have found is danger of killing bees in rapid handling.' Yet these hives seem to me to point to the true principle for attaining your end if it is desirable and workable. A hive built up of sections touching at the sides, with a box put over the whole, making a double-walled hive with no vacant places between combs and side of hive. By removing the box-cover before manipulating the sections, every part of the whole would become visible, and bee-crushing reduced to a minimum.

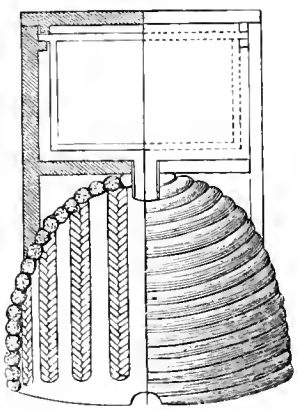
You asked in a former note for particulars as to prize for non-swarming system. You will find it in the same edition of Cook, p. 176, 'Mr. Quinby offered a large reward for a perfect non-swarming hive, and never had to make the payment.' I think the Association might well do the same, and probably with as much safety.—Stephen Nicoll.

[We are quite willing to agree to disagree on the points mentioned, relying more on the practical working out of

the question than on the evidence of authorities who work under an entirely different aspect. Time and experience will settle the question, and in the meantime we hope to try by every possible means to produce the best winter hive, for the necessity for such is at the bottom of the question. The section-frames alluded to are not in the same parallel with those which, having been proposed, called forth the criticism alluded to, the publication of which has at least satisfied our esteemed correspondent that our columns are 'open,' as we have all along professed them to be. Prevention of swarming and propolising will only be effected when the nature of the bee has been changed; in the meantime we can only do our best to render them as little inconvenient as is possible.—Ed.]

INTERMEDIATE HIVE FOR COTTAGERS.

There is a great desire in England to persuade the cottagers to adopt the frame principle in hives. But many are very timid or backward in doing so, and I think that a great deal lies in the difficulty of going over from the skep or dome hive to the hives of the day, viz., frame hives. As I have not seen or read of the plan I have tried and exhibited here to aid or help over the difficulty, I thought you would have no objections to give a small space for the following.



In any ordinary skep or dome hive of straw cut a circular hole two inches in diameter in the top. Then make a simple box, the two ends being deeper than the sides, and cut out to the rounding of the hive to support the box in its place on the hive. In the centre of the bottom cut a hole, in which insert a cardboard tube and tack it fast in the bottom of the box, with so much projecting as will go through the top of the straw hive as shown. The box can be made so large as to take three to four frames 9in. long by 8in. deep or other size to suit fancy. The frames rest on lists at each end of the box, and two lists or stops are nailed on the cover to keep it in its place. The hole in the hive is of use for inserting the feed-bottle in the spring and autumn if necessary, when the box or super is not in use. By having reserve frame, others can be put in the box, and the full ones taken out and the honey extracted as usual. The above plan is I think the simplest and easiest way for a cottager beginning to keep bees on the humane principle.—J. S. Wood, *Nyborg, Denmark.*

SEASON IN CORNWALL.

This has been a rare season for those who fed their stocks well last winter, but most did not do so, and have lost the greater part or all of them. Seven of mine survived out of nine, and I have now twenty, three or four of them doubles. They have bred so freely as to be quite a trouble, no adequate time being available to attend to them. Honey has come mostly from clover with which the fields have been covered, and the country filled with the perfume. So late as yesterday a small swarm emerged from a chimney, old quarters to which a previous swarm had gone this year. This late lot must actually be great-grandchildren of this year! I intend uniting them to another swarm. I have had some beautiful comb in sectional supers—about 20lbs. from one bar-frame hive and a little more to come.

I am going to try ammonia on my poisoned gloves. The bees are now revelling in mignonette, and several seem to find sweets in the sedums.—C. R. S. *St. Goran, Cornwall, August* 17.

THE PAST SEASON.

Now the season with us is over, I am in a position to decide as to its character as far as I myself and my neighbours are concerned. I should say that it has not been a very good honey season. During the time when the fields were full of flowers, beans, and mustard, and turnips for seed, the weather was not genial, and during the past week, when the buckwheat has been in full flower the bees have been out very little on account of the N.E. wind and the dull sky. I have succeeded in taking a little over 100lbs. of honey, which is less than I anticipated. I have been able to sell it readily at from 1*s.* to 1*s.* 6*d.* per lb. The principal part of this yield has been from three hives, two of which never swarmed; the third, an enormous double swarm. These three hives will have averaged 100lbs. apiece. They are bar-frame hives, and I have slung them repeatedly. I leave them now for the winter with a very heavy stock of honey in them. My own experience leads to the conclusion, that if you wish to obtain a quantity of honey, keep your stocks strong and do not let them swarm. My neighbours who keep bees on the old principle intend this winter to make the bar-frame hive, and work with the slinger. I have gone round to several, and have driven the bees out of the skeps that were to be taken up and then slung the honey for them, proving two things, 1st, that the honey so obtained is more than by the old system of draining; 2ndly, that it is all good, not mixed with brood or bee-bread. I have taken the brood and bees and added them to my stocks.—G. W. Wisbeach.

FEEDING BEES WITH DRY SUGAR.

Well, I have seen a little of it in my lifetime of seventy years. Mrs. Morgan, of Pontyrhydarw, sixty years ago, was reckoned an adept at bee managing. A swarm once settled on her back. She had the presence of mind to quietly undo her Welsh bed-gown (so called), let fall, very gently, both gown and bees; then fetched a hive, and got the swarm safely housed in it. The floor-boards were then invariably stones. Mrs. M. used to feed them occasionally; she placed a small handful of brown sugar, carefully dry, on the stone in front of each of her half-dozen hives, and the insects

came out and disposed of it. But I suppose a pound or two at furthest sufficed for the season. Mr. Jenkin Davies, of Craig-rhyd-y-maen, was another great apiarian in those days, and fed with dry sugar, adding a pinch of oatmeal. The killing of bees in October was a grand affair with these good people. Later, Mr. Jones of Cromtwrch fed with dry sugar, which used to cost him at the rate of threepence-halfpenny a pound; the sum of perhaps one shilling and two-pence during a hard season, to feed ten or twelve hives. But now Mr. Jones feeds with syrup, and instead of three or four pounds during the season, his bees consumed so much every night, and he would laugh to scorn the idea of placing a pinch of dry sugar at each entrance. Pity he has not yet been persuaded to do away with the sulphur pit!—JOHN DAVIES, *Ystalyfera, Swansea, Aug.* 21, 1880.

WOODEN FOUNDATION UTILISED.

I just drop you a line upon the subject of economy of hive interior. I am using half or split combs for front and back of hive, or moveable sides, and so using up two naked surfaces that have never been utilised before the introduction of your wooden foundation. If you think it worth mention in the *Journal* you are quite at liberty to do so.—W. G., *The Croft, Nantwich, August* 21.

[Some hives were exhibited at the late Kensington Show by Messrs. Abbott Brothers, the dummies of which were made of wood foundation, which the bees could work out on one side, forming a very warm wall of air-cells, and being similar to the above.—ED. *B. B. J.*]

BEES IN A CHIMNEY.

I was sent for on Friday, June 25th, to take a swarm which had settled in an unused chimney or flue (not sooty), about a foot down from the top. I scraped them into a skep, but could not find the queen. Still they seemed to settle in the hive, but towards the evening they all went down the flue again 15 feet, when I left them until the following Wednesday, June 30th, when I found them busy, but could not then see to the bottom, I filled a small tin can with holes in the bottom, with prepared touch-wood, lighted it, and put the can on some wire and twine, and let it down the flue; but it only excited them a little. On looking down after the smoke cleared away (the sun shining brightly), I could see five or six pieces of comb projecting from the wall on one side. So refilling the can, and letting it down again under the combs, I succeeded in raising the alarm, for out they came pell-mell, just as in a natural swarm, and were settling on a large tree. I was anxiously looking to see the queen come up, and wondering whether it was to be or not to be, as Shakespeare says, when she came marching up, and when about a foot from the top, I popped a small cage over her, and put her into the skep. But they did not seem to find her until I brushed a few into the skep with her. After a few minutes the joyful news was communicated, and the bees came from the tree and all parts, and joined her majesty in the hive, when I brought them safely down.—A. ADAMS, *Melksham, Wilts.*

INTRODUCTION: OR EARLY HISTORY OF BEES AND HONEY.

No. VII.

(*Continued from page* 207, *vol. VII.*)

We now come to the physiological discoveries of Schirach, 1761; Hunter, 1789; Huber, 1796; and others—men who have wonderfully advanced the science of entomology by a series of experiments most ably conducted, by the most patient investigation, and the most accurate and enlightened observation, and placed it upon the solid foundation of rational induction.

Several other writers also, both in systematic works and in periodical publications, have contributed to throw much light upon the economy and habits of the bee, amongst whom was John Keys, who published his first work, *The Practical Bee-Master*, in 1780. My father was a disciple of Keys, and adopted his humane system, and never killed his bees to take the honey. He was a very humane, good man, and almost the first thing he taught us was:—

> 'Take not that life thou canst not give,
> For all things have an equal right to live.'

I have now some bees in a wood hive that my father got made in 1806, on Key's system, and there have been bees in it from nearly that time to the present, yet it is as sound and good as the day it was made: this shows the great durability of wood over straw hives.

The immortal Thomson thus describes the barbarous practice of murdering the bees with sulphur to take the honey:

> 'Ah, see where robb'd, and murdered, in that pit,
> Lies the still heaving hive! at evening snatch'd,
> Beneath the cloud of guilt concealing night,
> And fixed o'er sulphur; while, not dreaming ill,
> The happy people in their waxen cells,
> Sat tending public cares, and planning schemes,
> Of temperance, for winter poor; rejoiced,
> To mark, full flowing round, their copious stores.
> Sudden the dark oppressive steam ascends;
> And, us'd to milder scents, the tender race,
> By thousands, tumble from their honey'd domes.
> Convuls'd, and agonizing in the dust,
> And was it then for this you roam'd the spring,
> Intent from flower to flower? for this you toil'd
> Ceaseless the burning summer heats away?
> For this in autumn search'd the blooming waste,
> Nor lost one sunny gleam? for this sad fate?
> O man! tyrannic lord! how long, how long,
> Shall prostrate Nature groan beneath your rage,
> Awaiting renovation? When obliged,
> Must you destroy? Of their ambrosial food
> Can you not borrow? and, in just return,
> Afford them shelter from the wintry winds;
> Or, as the sharp year pinches, with their own
> Again regale them on some smiling day?
> See where the stony bottom of their town
> Looks desolate, and wild; with here and there
> A helpless number, who the ruin's state
> Survive, lamenting, weak, cast out to death.'

For Thomson's humane appeal he has been thus apostrophised by Dr. Evans:—

'And thou, sweet Thomson, tremblingly alive
To pity's call, has mourn'd the slaughter'd hive,
Cursing, with honest zeal, the coward hand
Which hid in night's dark veil the murd'rous brand,
In steam sulphureous wrapt the peaceful dome,
And bore the yellow spoil triumphant home.'

Keys was succeeded by a host of writers on bees, including Sydserff, 1792; Bonner, the clever Scotch apiarian, in 1795; Huber, 1796, the king of bee-masters, who (although he was perfectly blind) made more true discoveries about bees than all the writers before him or since. Huber invented the first bar-frame hive, but his frames formed the ends and sides of the hive, and they opened with hinges the same as the leaves of a book. He was succeeded by Kirby, 1801; Buffon, 1812; Huish, 1815; and Dunbar in 1820.

Dr. Edward Bevan published his first work on Bees in 1827. This was the most scientific and useful work on bees that had been published in England up to that date, nay, I may say up to the present time, it has not been surpassed by any English writer. He was succeeded by Thomas Nutt, who brought the collateral system so prominently forward in his work, 'Humanity to Honey Bees,' published in 1832; and he says, 'Is it not inhumanity to force bees to deposit their treasures in a garret, two or three stories high, when a far more convenient store-room may be provided for them on the first floor?' Now this sort of reasoning sounded very true and nice, but the bees' instinct taught them to reject his collateral boxes on the ground-floor, and to deposit their honey in the highest and consequently the warmest part of the hive, as heat will ascend; so Nutt's collateral system has long since gone out of use.

Our late friend, Rev. William Charles Cotton, published his first work on bees in 1838; *Short and Simple Letters to Cottagers*, of which twenty-four thousand were distributed, and his enlarged work, *My Bee Book*, in 1842; before he took the bees out to New Zealand, which so benefited the colony; as before the introduction of the honey-bee, they had yearly to import fresh white clover seed (*Trifolium repens*), but by the agency of the bees, they are now able to export it. We should have little seed or fruit if it was not for the agency of bees in carrying the pollen from the male to the female blossoms. On April 8th, 1870, I visited the residence at Highgate of our noble and good President of the British Bee-keepers' Association, the Baroness Burdett-Coutts, whose name is almost a household word. When I went into the peach-house the gardener said to me, 'See! what a quantity of peaches I have got set!' I looked round and said, 'You have indeed; how do you account for it?' 'Well!' he said, 'I have always kept bees to fructify my fruit bloom, but last autumn I bought a stock of Ligurian or Italian Alp bees, and they being hardier than the common English bees, they began working earlier, and got into the peach-house, just as the trees are coming into bloom, and the result is, I have nearly double the quantity of peaches set I ever had before.' So you see it is not only honey that we get from the bees, but nearly everything else that we grow.

Mr. Cotton published and printed a work on bees, in New Zealand in 1848, *A Manual for New Zealand Bee-keepers*. The natives called the bees 'The White Man's Fly.' In 1872 Mr. Cotton published an amusing work entitled *Buzz-a-Buzz; or the Bees done freely into English*, from the German of Wilhelm Busch.

Major W. A. Munn published his first work on bees in 1844, and took out a patent for his bar-frame hive in Paris in 1843. Munn was the first to put a bar-frame inside a hive, but it was left to the Rev. L. L. Langstroth in America, Rev. John Dzierzon and Baron von Berlepsch in Germany; unknown to one another at the time, to simultaneously invent the modern bar-frame hive in 1852; which quite revolutionised bee-keeping, and brought it to such great perfection, that it has now become of national importance in many countries. These hives have rendered bee-keeping a more scientific study, as with them we have the full control over the bees, and can investigate all their proceedings whenever we like.

The Rev. John Dzierzon, the poor Carlsmark curate, published his first work on bees in 1846, and announced the discovery of the true doctrine of parthenogenesis in the honey-bee, or production by the queen without having any intercourse with the male or drone bee. This is so contrary to almost a universal law in the animal and vegetable kingdom, that he raised such a swarm of opponents, in nearly all the naturalists in Europe, who scouted the very idea of such a production, and raised such a host of objections against such a theory being true, that Dzierzon himself began to doubt the correctness of what he had seen with his own eyes. A number of them set to work to prove the fallacy of such a statement, but every experiment that was properly conducted only confirmed the correctness of Dzierzon's theory, and Professor Theodor Von Siebold (one of the most distinguished German naturalists and physiologists) fully confirmed this doctrine; after a laborious dissecting and microscopical investigation, he discovered a set of voluntary muscles for imparting some of the male element which is stored up in the spermatheca, to every worker egg, during its passage through the common oviduct. He also discovered lively spermatozoids in the semen of the drones, as well as in the contents of an impregnated spermatheca, and detected the same spermatozoids in worker eggs, whilst they were entirely wanting in these eggs that would produce drones.

This long and acrimonious dispute was at last conclusively settled, and it has explained many of the mysteries of the hives in which the great king of bee-masters, the illustrious Huber, after discussing the effects of retarded impregnation, exclaimed, 'It is an abyss wherein I am lost!' All other great bee-masters have been equally lost in this abyss, until Dzierzon discovered the doctrine of true parthenogenesis, and it is now a confirmed fact that the queen-bee has the power at will to lay drone or

unfructified eggs, or fertilised worker eggs: and I have conclusively proved the correctness of these statements with my own experiments.

All honour is due to Pastor Dzierzon for his laborious observations, for which and his numerous other discoveries the Emperor of Austria in 1873 decorated Dr. John Dzierzon with the Cross of the Knightly Order of Francis Joseph; and may he long live to enjoy his advancement and honours.

Dzierzon was succeeded by Miner, 1849; Rev. L. L. Langstroth and M. Quinby, who both wrote very excellent works on bees in 1853; and the Baron von Berlepsch, who published his first work on bees in 1860, a second edition in 1868, in the production of which he bestowed immense labour, and it is said he read seventeen thousand pages of the best bee-books in the world to make it the most perfect bee-book ever published. The Bee Journals in different countries have done a great work in advancing bee culture.

I think I have now given you a short account of bee-keeping from the earliest date of which we have any records to the present time, the compiling of which has taken a very great amount of labour; and in conclusion, can truly say the culture of bees is indeed an object highly deserving the attention of the agriculturist as well as of the natural philosopher. Their study is an endless source of pleasure, and the more you know about them, the more you will want to know. To go and sit down near your bee-hives, when your mind is troubled with the cares, crosses, and afflictions of this life, the bees' soothing, happy hum, contented busy life, constantly going in and out of the hive, imperceptibly draws your attention from yourself and your great sorrow, for a time at least; and many an hour have thus been passed in comparative happiness by the poor sufferer, that would otherwise have been spent in agony, in mourning over his affliction or bereavement. I speak from experience.—William Carr, *Newton Heath Apiary, near Manchester.*

(To be continued.)

BEE-KEEPING NEAR TWO THOUSAND YEARS AGO.

A quarter of a century before the Christian era, the poet Virgil appears to have been studying apiculture on his father's farm near Mantua, in Cisalpine Gaul. His hints on the habits and requirements of this wonderful insect have not only a classic interest, but after the lapse of nearly nineteen centuries may be read and followed with advantage by the bee-keeper of the present time:—

'First for thy bees a quiet station find,
And lodge them under covert of the wind
(For winds, when homeward they return, will drive
The loaded carriers from their ev'ning hive).

. . . . . .

But near a living stream, their mansion place
Edg'd round with moss, and tufts of matted grass,
And plant (the wind's impetuous rage to stop)
Wild olive-trees, or palms, before the busy shop.

. . . . . .

Then o'er the running stream or standing lake,
A passage for thy weary people make.
With osier-floats the standing water strow;
Of many stones make bridges, if it flow.
That basking in the sun, thy bees may lie,
And, resting then, their flaggy pinions dry,
When, late returning home, the laden host
By raging winds is wreck'd upon the coast.
Wild-thyme and sav'ry set around their cell,
Sweet to the taste and fragrant to the smell.
Set rows of rosemary with flow'ring stem,
And let the purple vi'lets drink the stream.
Whether thou build the palace of thy bees
With twisted osiers or with barks of trees,
Make but a narrow mouth: for as the cold
Congeals into a lump the liquid gold,
So 'tis again dissolved by summer's heat;
And the sweet labours both extremes defeat.
And, therefore, not in vain the industrious kind,
With dauby wax and flowers the chinks have lined.
And, with their stores of gather'd glue, contrive
To stop the vents and crannies of their hive.
Not birdlime, or Idæan pitch produce
A more tenacious mass of clammy juice.

. . . . . .

But plaster thou the chinky hives with clay,
And leafy branches o'er their lodgings lay;
Nor place them where too deep a water flows,
Or where the yew, their poisonous neighbour grows.'

L. E. R., *Alderley Edge.*

WILDMAN'S BEE-KEEPING AND MOVEABLE COMBS.

Having found in the library here a copy of Wildman's work on bees, dated 1778, I have thought it might be interesting to your readers to learn something of what he was acquainted with in the handling of bees, as I do not remember reading in your *Journal* any previous notice of his work.

The one thing that strikes me as remarkable in his book is, that with all his well-known mastery over bees he seems to have been quite unacquainted with the reason why bees are quieted by smoke. He appears to have used it under the impression that it stupified them, as he never notices the effect which it produces in making them gorge themselves with their sweets.

In his instructions about handling bees I do not find him advocating the use of smoke, except as a means of driving bees from one hive to another.

He describes two sorts of hives, which he recommends. The first of which is a common round straw hive, with seven *fixed* bars half an inch apart, and with a cross-piece to run through the combs to keep them firm, which would effectually prevent their being removed. Over these bars was to be placed a piece of paper, which was to be covered with a compost of dung; and the whole was to be roofed with straw. The second hive was a combination of two boxes, one placed above the other, with slides to separate them when wanted. These were furnished, also, with frames, which, however, are not described as moveable; but the cover of the upper box was arranged of wood and glass, and was capable of removal.

In one part of his book, in accordance, as he says, with an 'unwary' promise, he reveals the secret by means of which he attached bees to different parts of his body. He states that long experience had taught him that as soon as he turned up a hive and had given some taps on the sides and bottom the queen immediately appeared, to know the cause of the alarm, but soon retired again among her people. Having nimbly seized her, he was by this means able to attract the bees to any place he pleased; and, by sometimes tying a thread of silk round

her body, he compelled her to remain wherever he chose to place her.

The only other matter which I have remarked in his book worthy of note is a quotation from the travels of a Mr. Geo. Wheeler, who describes the method adopted by the natives on Mount Hymettus. He says:—'The hives they keep their bees in are made of willows or osiers, fashioned like our common dust-baskets, wide at top and narrow at the bottom, and plastered with clay or loam within and without. They are set with the wide end upmost. The tops are covered with broad flat sticks, which are also plastered over with clay: and, to secure them from the weather, they cover them with a tuft of straw, as we do. Along each of these sticks the bees fasten their combs, so that a comb may be taken out whole, without the least bruising, and with the greatest ease imaginable. To increase them in spring-time—that is, in March or April, until the beginning of May—they divide them; first separating the sticks on which the combs and bees are fastened from one another with a knife: so taking out the first comb and bees together on each side, they put them into another basket, in the same order as they were taken out, until they have equally divided them. After this, when they are both again accommodated with sticks and plaster, they set the new basket in the place of the old one, and the old one in some new place,' &c.

By this it would appear that the natives of Hymettus have long had a rude sort of moveable-frame system, with artificial swarming; and it is rather astonishing that Wildman himself did not take example.—C. Feilding, *New Paddox, Lutterworth.*

PURELY MATED QUEENS.

Since the introduction of Italian bees much effort has been put forth in the endeavour to have the young Italian queens mated with pure Italian drones, resort being had to attempts at fertilisation in confinement, isolating the queen, rearing stocks on islands and other out-of-the-way places, and a common plan being to dispose of as many of the black queens and drones in the vicinity as possible. Much money and labour have been expended in these directions with not always satisfactory results; and it is out of the reach of a large majority of bee-keepers to obtain purely mated queens in these ways; hence they have to run their chances by raising as many pure drones as they can in their own yards. This will go a great way towards the desired object, but we can still add much more that is within the reach of all bee-keepers. But we will begin back at the start and see how best to accomplish this. The time taken to raise a queen from the egg to hatching is sixteen days, but they are many times raised from eggs already hatched as workers before the bees take them to raise queens of; hence some queens are hatched in eleven or twelve days. These young queens usually do not make their fertilising flight under five days old, and we should have had plenty of drones flying from our best Italian stocks by the time these young queens are ready for their bridal trip. Drones and young queens usually fly from one to three o'clock in the afternoon. Now we want to get the start of these black and hybrid drones if we can, so about half-past ten or eleven o'clock in the forenoon we will go to our stocks containing young queens of the right age, and also to our pure Italian stocks, from whose drones we wish to breed, take off the caps of the hives, then the quilt or honey-board, and thoroughly sprinkle each stock with very thin warm honey, or a like mixture of sugar-syrup, and close the hives at once. In a very few minutes the air will be filled with bees, drones, and young queens (if of the right age) rushing out of the hives like a pack of schoolboys at recess, and making about as much noise, too, the worker-bees to hunt around for that inflow of warm honey, thinking, perhaps, that the flowers have got tired waiting for the tardy bees, and are bringing it to the hives, roots, plants, honey and all; the drones and young queens, hearing the noise, want to know what it is all about, and come out to have a 'finger in the pie' too; and as there are but few drones flying at this part of the day, your chances for purely-mated queens are tenfold greater, and, too, with drones raised from the most prolific queen, whose bees are the hardest workers. This plan followed up day after day till all the young queens are mated will well repay all extra trouble in bringing it about.—Wm. M. Kellogg (in *Prairie Farmer*).

FEEDING WITH SWEETENED MILK.

As in our cold districts the flowers do not appear in any quantity at least before the 15th or 20th May, and as one generally reckons thirty-seven days before the bees commence collecting honey and pollen, feeding is not commenced till about the 1st of April. In stimulating breeding too soon terrible accidents are sometimes brought about by the unexpected return of cold weather. If the brood is too numerous, and too widely spread relatively to the number of bees, and if cold weather suddenly supervenes, the bees cluster, and the brood, being abandoned, dies, decomposes, and generates foul brood. However, it is known that beyond what can be used for building combs or feeding the brood, our pet insects will not take food well. While the weather continues cold they will not willingly accept milk-food. To accustom them to taking the food they should first be given liquid honey mixed with water, or a syrup of moist sugar in proportion of four parts of water to seven of sugar. At the end of a few days we give them white sugar dissolved in good milk fresh from the cow. At first we put $2\frac{1}{4}$ lbs. of sugar to $1\frac{3}{4}$ pints of milk: the proportion of sugar should be diminished by one half when one is assured that the bees like that which has been given them. The sugar should be dissolved in boiling milk and given to the bees lukewarm, but its temperature must not be above twenty degrees. It may be given to them in a bottle covered with a sheet of metal and reversed on the bars, or simply in an ordinary bottle reversed on a metallic platform in such a manner that the liquid shall not escape faster than the bees can consume it. Theoretically speaking, milk such as one draws from the cow is preferable to whey which is deprived of its azotic elements, for the nourishment of milk owes its efficacy precisely to the azotic substances which it contains.

Add no salicylic acid, as you are told by the German bee-keepers, for it immediately produces a curdling, and the solid part is then lost.

The greatest possible quantity of this food may be given without danger. Yet as it turns sour after two days, it is better to give little at a time and renew it frequently. When the colony is strong and the queen fertile, the milk-syrup accelerates the construction of combs in a prodigious manner if the weather is mild.—A Fribourgh Bee-keeper, *Bulletin d'Apiculture pour la Suisse Romande.*

THE QUANTITY OF HONEY EMPLOYED IN MAKING WAX.

By M. Arviset.

From curiosity and for self-instruction, I made several experiments in the years 1866 and 1867, on the quantity of honey employed by the bees to obtain wax. These experiments have given variable results, according to the manner in which I operated, the time at which I gave the honey to the bees, and the degree of temperature. But I shall not enter into the details, they would be too long. To make these experiments I constructed a new hive, in order that it should not have a vestige of wax or

propolis. This hive consisted of a square box, furnished with several ventilators, and two windows, one on each side, so that one might see what passed within the hive without disturbing the bees. By setting the hive in an obscure place, and presenting a light at one of these windows, the bees could be effectually seen at their work. The floor-board of the hive was grooved in the middle, and received a feeder which was flush with the surface. In the upper part of the hive was a perforated metal case which contained a thermometer, to show the degree of heat in the hive near the bees, or in the clusters which they formed.

When all was prepared, as I have already said, I ascertained the weight of my empty hive, transferred to it a strong swarm of bees, and then reweighed the hive to find the weight of the bees. I took the precaution to transfer the bees on a wet day, in order that they should have no pollen in their baskets, and but little honey in their stomachs or wax in their wax-pockets. I then placed the hive on its stand, on which was the feeder, containing newly-taken liquid honey.

I carried the hive to an obscure, healthy room. The bees showed great alacrity in getting possession of the honey in the feeder, and forming themselves into clusters for the purpose of converting the honey into wax. As a swarm which had been placed in an empty hive, the bees immediately commenced to build combs, as they soon had wax-scales in their pockets ready to be used. I left the bees shut up from four to six days, but never more than six.

The bees suffered much from being submitted to this treatment, both from being deprived of pollen and water, and from the increased heat of the hive, which from their struggles to escape sometimes rose from twenty to thirty-six degrees. But towards night they became calm and constructed combs.

At length when I considered that the honey had been converted into wax, I again transferred the bees to an empty hive, and weighed them to see if they were heavier than before their instalment. I detached the combs, which were partly filled with uncapped honey, and weighed them, and then gave it to the bees to suck out. After that I weighed the wax, and subtracted the weight from that of the partly-filled comb, and found by approximation the quantity of honey used in the formation of the wax which I had obtained.

The average of my experiments has proved that 500 grammes of honey give 100 grammes of wax (one part of wax to five of honey). I think that when at liberty the bees could produce a much larger quantity: but it appears to me very difficult to verify precisely.

I have made six experiments, and in all of them the bees have produced combs resembling those built by swarms during the first few days of their instalment, and from no other substance than honey; and as the bees were entirely deprived of pollen this proved that that matter does not enter into the confection of wax, or at least that it is not indispensable for its production. This is a fact which every apiarist from the time of Huber can ascertain for himself.—*L'Apiculteur.*

A BEE STORY FROM SAN FRANCISCO.

I had an improved back-yard. I went through a seed store, and bought a sample of everything that would grow in this climate. The result was a perfect tangle of flowers and things, from an overgrown sunflower to a forget-me-not. Mrs. Bricktop is very proud of our garden, and while gushing over it the other morning a happy thought worked its way under her back hair. 'What a delightful thing it would be to have a hive of bees and raise our own honey, as well as everything else.' I have always thought that woman inspired ever since she convinced me that I couldn't do better than to marry her. This was an original, bold idea—a happy thought. I promised her a hive of bees, and went to business with a lighter heart and firmer belief in the genuineness of home comforts and amusements. I bought a hive of honey-bees, and brought it home with me that very night. It was one of those patent, hydrostatic, back-action hives, in which the bees have peculiar accommodations and all the modern improvements. It was a nice little hive—none of your old-fashioned barn-size affairs. It even had windows in it, so that the bees could look out and see what was going on, and enjoy themselves. Both myself and Mrs. B. were delighted, and before dark I arranged a stand for the hive in the garden, and opened the bay windows so that the bees could take an early start, and get to business by sunrise the next morning. Mrs. B. called me 'honey' several times during the evening, and such sweet dreams as we had. We intended to be up early next morning to see how our little birds took to our flowers, but a good half-hour before we probably should have done so we were awakened by the unearthly yells of a cat. Mrs. B. leaped from her downy couch, exclaiming, 'What can be the matter with our yellow "Billy?"' The yells of anguish convinced us that something more than ordinary was the matter with him; and so we hurried into our toilets. We rushed out into our back-yard, and, oh! what a sight met our astonished gaze! The sight consisted of a yellow cat that appeared to be doing its best to make a pin-wheel of itself. He was rolling over and over in the grass, bounding up and down, anon darting through the bushes and foliage, standing on its head and then trying to drive its tail into the ground, and all the while keeping up the most confounded yowling that was ever heard. 'The cat is mad!' said Mrs. B., affrighted. 'Why shouldn't he be? the bees are stinging him,' said I, comprehending the trouble. Mrs. B. flew to the rescue of her cat, and the cat flew at her. So did the bees. One of them drove his drill into her nose, another vaccinated her on the chin, while another began to lay out his work near her eye. Then she howled and began to act almost as bad as the cat. It was quite an animated scene. She cried, 'Murder!' and the neighbours looked out from their back windows and cried out for the police, and asked where the fire was. This being a trifle too much, I threw a towel over my head, and rushed to her rescue. In doing so, I ran over and knocked her down, trod upon the cat, and made matters no better. Mrs. B. is no child on a wrestle, and she soon had me under her, and was tenderly stamping down the garden-walk with my head, using my ears for handles. Then I yelled, and some of the bees came to her assistance, and stung me all over the face. In the meantime the neighbours were shouting, and getting awfully excited over the show; while our servant, supposing us fighting, opened the basement door and admitted a policeman, who at once proceeded to go between man and wife. The bees hadn't got at Mrs. B.'s tongue yet, and she proceeded to show the policeman that I had abused her in the most shameful manner, and that I had bought a hive of bees on purpose to torment her into the grave. I tried to explain, but just then a bee stung the officer on the nose, and he understood it all in less than a minute. He got mad, and actually lost his temper. He rubbed his nose, and did some official cursing. But as this didn't help matters at all, he drew his club, and proceeded to demolish that patent bee-hive. The bees failed to recognise his badge of office, and just swarmed on him. They stung him wherever he had no clothing, and some places where he did have it. Then he howled, and commenced acting after the manner of the cat and its mistress. He rolled on the ground for a moment, and then got up and made for the street, shouting, 'Fire!' Then the bees turned to the people who had climbed upon the fence to see the fun. Then they had some fun. Windows went down, and

some of the neighbours acted as though they thought a twenty-inch shell was about to explode. By this time a fire-engine had arrived, and a line of hose was taken through the house into the back-yard. One of the hosemen asked where the fire was, but just then one of the bees bit him behind the ear, and he knew. They turned a stream upon that half-wrecked bee-hive, and began to 'play away' with one hand, and fight bees with the other. But the water had the desired effect, and those bees were soon among the things that were. A terrible crowd had gathered in the meantime in front of the house, but a large portion of it followed the flying policeman, who was rubbing his affected parts, and making tracks for the station-house, and a surgeon.

This little adventure somehow dampened our enthusiasm regarding the felicity of making our own honey. During the next week we wore milk-and-water poultices pretty ardently, but not a word was said about honey; and now Mrs. B. has gone to stay a week with her mother, leaving me and the convalescent tom-cat, and the tickled neighbours, to enjoy our own felicity.

LECTURE AT CHELMSFORD.

The lecture on bees recently given by the Rev. G. Raynor, rector of Hazeleigh, in connexion with the Essex and Chelmsford Museum, seems to have created considerable interest in the neighbourhood, as evinced by numerous letters since received by the lecturer containing inquiries as to bees, hives, &c. Strange to relate, says the gentleman named, who has had as large an experience in bee-keeping as almost anyone in the kingdom, despite the unfavourable weather, we have had several swarms of bees. A suggestion has been made to hold an exhibition of bee-driving in Chelmsford, in connexion either with a summer gathering of the friends of the Museum of the usual summer show of the Horticultural Society, such exhibitions being easily organized in any district on communication with the authorities of the British Beekeepers' Association, who under certain conditions lend a specially constructed Bee-Tent, and furnish an operator and lecturer. The Association in question, whose annual meeting was recently held at 446 Strand, deserves the hearty support of all interested in furthering the welfare of the working classes, and should not lack members from Essex at the moderate subscription of 5*s*. —*Chelmsford Chronicle*.

Case of Gradual Cure of Cataracts in the Eyes.—Mrs. U——,of St. Marychurch, was told by a clever London oculist, about three years since, that she had cataracts in her eyes, and must wait until she became quite blind to be operated on. Last August she heard through a neighbour that her sight might be restored by anointing the eyelids three times daily with pure and fresh honey, first washing the lids with warm water, to get rid of any dust collected. She immediately began regularly anointing her eyes, and still continues; at first she could not distinguish the features of anyone, though very near her, and can now see a hundred yards off, and reads with magnifying glasses. After each anointing, the eyes smart, and run with water. Much phlegm collects round the throat and ears.—Devoniensis (*Church Bells*).

[The above is a reply to a correspondent in *Church Bells*, desiring further information as to the application of honey in the case of cataracts. See our last number.—Ed.]

Abbott's Wide-shouldered Frames.—On account of their inconvenience (distance) pins have been abandoned by most bee-hivists, who have replaced them by metal ends or by shoulders or ears left at the end of the top bars. The improvement of 'Abbott' is the most successful in this direction; they got but slightly propolised, and surpass the racks which other inventors have adopted.—M. Hamet, *L'Apiculteur*, *August* 18.

Echoes from the Hives.

Chichester.—'Did you ever hear of a maiden swarm throwing a swarm the same year? During the past winter I lost every bee I had, but not for want of feeding. This year I have started afresh with three fine swarms, and am in hopes of taking 180 lbs. of fine honey.'—A Believer in the Bar-frame Hive.

Dunfermline, Lassodie.—'A Curious Apiary.—No. 4 pithead frame at Lassodie Collieries is made of cast-iron pipes, tied together by wooden blocks between the pipes with bolts. In casting these pipes a mistake was made in putting the holes opposite to where they should have been, so that new holes had to be bored, and the others were allowed to remain open. On 26th June a swarm of bees alighted on the pithead frame and crept into the open hole in the middle of the pipe nearest to the pulley on the east side, and there they remain. On July 6 another swarm alighted in the same way and went into the same hole, and the two swarms are now working together.'

Newton Kyme, nr. Tadcaster, Aug. 11.—'I only wish I could give a favourable report of bees in this district, but I am afraid we are in a very little better position than we were this time last year as far as honey is concerned; but we have this advantage, that there are plenty of bees in the hives. I have returned swarms where I thought necessary, and in other cases put two and three swarms together, and to-day I lifted my first swarm and found it very light. In my four Stewartons I can see no honey through the glasses, and very little in a Woodbury which never swarmed, and was my strongest hive in the spring. It is a case of feeding again, or losing nearly all. We have plenty of beans, white clover, and a magnificent avenue of limes; and with these advantages I cannot get much honey, even in favourable years; and I cannot make out how people get the fabulous amount of honey which I see stated is done in your *Bee Journal*, I have had from two to forty hives since 1846. If any of your correspondents could enlighten me I should be deeply grateful.—J. C.'

Market Drayton, Shropshire, Aug. 4.—*Honey Harvest*. —'Your favourable notice of July as a honey-gathering month unfortunately finds no echo here. With us it has been bad; twenty-four days of rain, with 7.62 inches of rain, have spoilt our season; no supers, but plenty of swarms. The queens having abundant cell-room took advantage of it. Consequently I have been persecuted by persistent swarming.'—A. C.

Kendal.—*Prolific Bees*.—'My bees have been remarkably prolific this season. I cannot hear of any person in this district who has ever heard of a second virgin swarm. My only stock-hive (a cast of last season) threw off a swarm, May 20th, and a cast on June 5th. The swarm threw off a virgin swarm July 12th, and another July 21st, so that I have now five hives of bees which are all doing well. I feed all new stocks every night for at least two weeks, and find that it answers well, as they soon fill the hives with combs. In this district we have had a deal of wet and cold weather, and at present there is a poor prospect for honey.'—Robert Davis.

Carlisle.—'My bees have done splendidly. It is perfectly astonishing how much I have taken from them by your invaluable extractor during the hot weather. It has been, Take all and come again as soon as possible.—J. L.'

NOTICES TO CORRESPONDENTS & INQUIRERS.

J.—*Beeswing's Advice to Bee-keepers*.—The only address that we can give for this little work is H., No. 7 Eign Road, Hereford. Price 3½*d*., post free.

*** *The report of the West Kent Bee-keepers' Association Show at St. Mary's Cray is unavoidably postponed till next month.*

BEE AND HONEY SHOWS FIXED FOR 1880.

Sept. 3.—Devon and Exeter Association at Exeter.
Sept. 4.—Stirling Association at Stirling.
Sept. 4.—Perthshire Apiarian Society at Perth.
Sept. 9.—Lincolnshire Association at Boston.
Sept. 13.—Honey Fair, Grantham.
Sept. 21 to 25.—Suffolk Association at Ipswich.
Oct. 26 to 29.—British Dairy Farmers' Association, Agricultural Hall, London.

BEE TENT ENGAGEMENTS.

BRITISH BEE-KEEPERS' ASSOCIATION.

Sept. 3.—Devon and Exeter County Show.
Sept. 7.—Suffolk County Show at Ipswich.
Sept. 7, 8.—Warwick County Show.
Sept. 17.—Great Dunmow.

HERTFORDSHIRE COUNTY ASSOCIATION.

Sept. 2.—Harpenden Horticultural Show.
Sept. 9.—Bengeo Cottage Garden Show.

TOUR IN IRELAND.

Sept. 2.—Newtownards Flower Show. Near Belfast.

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THREE Neighbour's Mahogany-top Feeders, 3*s.* each. 1 Neighbour's 35*s.* Improved Cottager's Hive, second-hand, with 3 bell-glasses, 10*s.* 6*d.* 1 Land Measuring Chain, 66 feet (invaluable for Cricketers), 3*s.* 6*d.* 1 Hexagon Stock Box, 1 window, 2*s.* 6*d.* 2 Octagon Stock Boxes, 3 windows, each, 3*s.* 6*d.* Nucleus Hive 3 Woodbury Frames, each, 2*s.* 6*d.* Nucleus Hive 3 Standard size Frames, each, 3*s.* 6*d.*

FOR SALE.—A Bee House, new last year, well painted. Will hold Thirteen Hives. Length 7 ft. by 4. Price 50*s.* Address C. C. CUST, The Bank, Wareham, Dorset. fo. 51

FOR SALE.—Dr. Bevan on the Honey Bee. Clean copy. Author's original edition, published 1827, at 9*s.* 404 pages. Price 7*s.* 6*d.* A. L. SHIPP, Wigston, near Leicester. fo. 51

SEVERAL Hives of Bees for Sale in Bar-frame Hives, (Woodbury, and others.) J. TORRY, Lower Fant Road, Maidstone. fo. 50

A FEW good Stocks in Straw Hives, price 18*s.* each. Also a few lighter Stocks, will require feeding up 10*s.* 6*d.* each. A few lots of Bees, driven from strong Stocks, price, with package, 5*s.* 9*d.* each lot respectively. ISAIAH GADD, Wokingham, Berks.

'ROYAL FOREST' Straw Hives, 3*s.* 9*d.* each. Supers for same, 2*s.* 6*d.* each, fitted with new pattern Excluder and Quilt. ISAIAH GADD, Wokingham, Berks. fo. 14

SECOND-HAND Walton's Extractor, takes Woodbury Frames, £1. Free on Rail.

SECOND-HAND Walton's Extractor, in nice wood frame, turned legs. Photo. Price 45*s.* JOHN WALTON, Weston, Leamington. fo. 12

PRIME BEES' WAX at 1*s.* 6*d.* per lb., in large or small quantities. Address ABBOTT BROS., Fairlawn, Southall.

THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

[No. 90. Vol. VIII.] OCTOBER, 1880. [Published Monthly.]

Editorial, Notices, &c.

OCTOBER.

The lovely weather of August and the early part of September, five full weeks of glorious sunshine by day, and balmy warmth by night, scarcely varied by even a passing shower, has been so great a boon to the country at large as to call forth the deepest feelings of thankfulness to the Giver of all good, for more splendid harvest weather could scarcely have been wished for, and could not well have been. The change that has occurred came also most opportunely, and agriculturists may now rejoice in the possession of well-housed grain crops, and the prospect of heavy roots, and an abundance of late pasture.

There will, as a matter of course, be those amongst the many culturists and manufacturers with which this land of ours teems to whom every condition of weather will have been in a measure ill-timed and antagonistic, but in a general sense all must acknowledge that the season has given cause for rejoicing and praise. To bee-keepers it has been especially good, and where intelligently cultivated the bees have done exceptionally well, having regard to their surroundings; and we may almost say that in every district there has been at some time a good honey yield, and full opportunity for its ingathering; and in many places the happy state of things has occurred repeatedly. It may, however, be taken for granted that the harvest is now past, and though the gleaner bees may bring in a few laboriously gathered grains of honey, there is little prospect of their increasing their store, or, except where ivy abounds, getting more than a hand-to-mouth living.

The year in an apicultural sense has been a good one; following an exceptionally bad one, during the autumn and winter of which the bees nearly died out of the land, it has been a source of intense wonder how their numbers have so rapidly increased that there is now no scarcity of them. It is the same with the wasps; last year they were scarcely able to exist, and it was believed that they were well-nigh exterminated, but the remnant have proved their 'fitness' for survival by increasing so enormously that they have this year been a greater pest than ever. With wild bees there is similar evidence of extraordinary fecundity, tending to show that after a year of famine and death, the power of increase is more largely developed in the survivors, a fact which may account for the many complainings we have heard of bee-swarming heavily in preference to storing honey in the receptacles provided for them.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

Preparing for Winter.—The harvest being past and the summer ended, it is now necessary to prepare for the winter, which in the ordinary course will soon be upon us, and which, whether mild or severe, will be a time of trial for the bees and their owners. Fair-weather bee-keepers there are in plenty, but he only can be deemed worthy the name of bee *master* who understands how to winter his bees and who does it successfully. One of the greatest hindrances to success in this direction is the habit many have of putting off the duties which naturally devolve upon them; and it may truly be said 'we all do it' far too much for our own well-being, and instead of being 'ready,' emergency finds us unprepared, and our efforts 'too late' to be effectual. More than half the bee-keeping difficulties that worry our friends, and fill our office with inquiries, would never appear if they would *read* our *Journal*, and believe and act upon its teaching; but as in matters incomparably higher in importance, the simple truth is often unheeded, and a 'patent' way chosen that brings disappointment and regret.

With these ideas fresh in their minds, we cannot too strongly urge amateurs who wish to bring their bees safely through the winter, to

lose no time in preparing them for that time of trial and to follow our lead, leaving experiments to older hands, who, having former experiences to guide them, have more reasonable right to venture into unknown regions.

Requirements for Winter.—These may be shortly summed up. A hive should be perfectly dry, should contain plenty of bees, a young healthy queen, and a sufficiency of sealed stores; it should be capable of retaining heat, yet permit of upward ventilation without draught; and it should be so arranged that while it shall receive the full benefit of every gleam of sunshine, no bright glaring light should be allowed at the entrance, particularly when the ground is covered with snow; and, furthermore, it should not be exposed to risk of accidental disturbance from high winds, or the visitations of cattle or vermin.

Perfect Dryness from without may be insured by a protecting-roof, which shall well overhang the sides of the hive, and by the absence of projections of the floor-board, or other parts on which driving rain, sleet, or snow may find a lodgment, and thence soak into the hive. Every hive should stand on, and if possible overhang, its own floor-board, and not upon bare benches or stools that the body of the hive does not cover, the latter being inimical to dryness.

Alighting-boards should have protective porches, or should be non-retentive of moisture. In this particular we have found a piece of largely-perforated zinc act admirably, giving good foot-hold for the bees, yet permitting rain and the dust from the hive to pass through. Its coldness is no disadvantage, as it will be warm enough for the bees to travel on when the weather is sufficiently so to warrant their leaving the hive.

Plenty of Bees may be insured, as a rule, by the process of gentle stimulative feeding, originated by us, and so often recommended in the *Journal*,* a process doubly valuable since it causes the production of young bees, which are more likely to live and do good service in the spring than are the aged that have earlier summer birth. Where this precaution has not been adopted, and bees are comparatively few in numbers, the union of two or more stocks will secure the *desideratum*, and it will be found far better to unite them than to try to winter them separately.†

Young Queens are more desirable than aged ones, since their chances of living are greater, but we should hesitate before superseding a queen that had continued the population well into autumn. It is often wise to let 'well alone.'

Sufficiency of Sealed Stores can be effected by feeding bees that are not well supplied, in time to enable them to evaporate the surplus moisture from their food before cold weather sets in. Liquid food in a hive is highly dangerous to bee life, and likely to cause dysentery, a disease that generally ends in the destruction of the hive, and as we believe, originates foul-brood—anyhow, in our experience, the latter has generally followed it. (See Leaflet on Feeding.)

Capability of Retaining Heat.—This essential quality in a hive is generally acknowledged to be the most important for wintering purposes, yet how often do we find it sacrificed to whimsical ideas of convenience, spaces being left over and around the bee-nest that permit the dispersal of the heat generated by the bees, and the condensation of their moist vapours against the colder parts with which they come in contact. The subject has been well worn in previous columns, and we have devised, produced, and exhibited hives that would prevent the objections mentioned, but they are not yet acceptable to judges, or readers, and taking hives, therefore, as they are, we offer such suggestions as will best help to preserve the comfort of the bees within them.

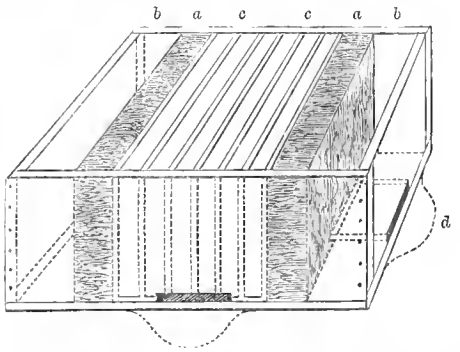
Packing Bees for Winter is an art which has been many years developing, though one would think the natural bee-nest afforded a good criterion of their requirements, and so far as the conditions found therein are attainable in hives made for their profitable cultivation, the model, we hold, should be adhered to. In skeps and other hives in which the combs are not moveable, the bees being healthy, will have taken care of themselves, and, provided they are sufficiently strong and well found in provision, will require little beyond additional wrapping to guard against excessive cold. Some old sacking, hay-bands, or carpet bound about them, the whole well covered with a roof, will meet their requirements as a rule, but it would be well to prevent the roof from touching the crown of the hive, or the vapours passing upwards through it may condense against the underside of the former and do mischief.

There are many well-known ways of protecting skeps with straw, shavings and the like; and by inverting tubs or boxes over them, any of which means will be effectual, and provided the entrances be altered to prevent the intrusion of enemies, and injury to the bees by suffocation or glaring sunshine, little harm can happen. The chief difficulty in wintering is with hives in which the comfort of the bees has been the secondary consideration, and the bee-keepers' convenience the primal.

* See Leaflet on Feeding. Post free for 1*d.*, at our office, Southall.

† See Leaflet on Uniting. Post free 1*d.*

The frames as arranged in a hive do not touch each other or the walls of the hive, and the bees occupying perhaps not half the space between the actual frames of combs, will suffer greatly from loss of heat, and therefore it will be well to cut off the superfluous space by the introduction of a divider, or better still, of two, one on each side of the brood-nest, the spaces outside being filled with packing of hay, chaff, or shavings, or the division boards may be warmly covered with woollen or other quilting.



In the woodcut *a a* are dividers, which may take the form of chaff cushions as recommended in America; *c c* are the enclosed frames, the interstices between and around which should be *filled* with bees; and *b b* the empty space which may be filled up with hay or chaff. Should the hive entrance be at *d*, as in Abbott's Combination Hive, a small tunnel of perforated zinc should be fitted to lead through the space *b* to the bee-nest, unless it be preferred as an ante-room for the bees.

American bee-keepers, whose winters are much more severe and protracted than ours, strenuously recommend that the bees should be crowded into as small a space as they can be made to occupy, that there may be no room for the circulation of air, except amongst themselves; and Mr. D. A. Jones of Canada advised, while here, that the bees should even be forced to *occupy the space round the frame-ends*, which we have hitherto advised should be filled up with pieces of wood during winter, to prevent loss of heat. Crowded in this way, and gently fed, the bees will breed later, and with more safety from the effect of cold, than under any other conditions; but we should prefer not to encourage breeding after October, or a cold snap may prevent the young and nurse-bees from taking a necessary cleansing flight, and evil may result. Breeding under natural conditions may not necessitate such flight in winter weather, but, when the result of stimulation, it appears to be essential. Hives being thus reduced in size, and the escape of heat around the nest prevented, it is evident that no loss of that important element can take place except through the top or at the entrance; and to prevent the former a warm quilt or porous cushion will be effectual, and in the latter case the entrance should be contracted to suit the hive's requirements. As a rule, half an inch of width and height will be ample, but less may prevent the passages of a live bee with a dead one, and may cause the blockade of the entrance, and the suffocation of the bees within.

Upward Ventilation is highly essential in hives during winter that the moist vapours may escape, otherwise they may condense and freeze at the entrance, or on the inner parts of the hive; or, when not freezing, cause dampness to the combs. The quilt or porous cushion must be arranged to permit this, but not to allow draught through the bee-nest, which is inimical to the well-doing of the bees. The space between the roof and quilt should permit of a free current of air, or the vapours may condense there and the quilt become wet. No hive-cover should be permitted to confine the crown of the hive hermetically, under any circumstances.

Sunshine, for drying purposes, is important for the well-being of hives during winter, and they should, therefore, on no account, be set in permanent shade. Entrances should be shaded as before suggested, to prevent glaring light tempting the bees out when the weather is too cold for them, during snow or cutting winds. Shelter from the north and east winds is also desirable, particularly in early spring, when bees are tempted to go out in search of food; and hives should be firmly seated, so as not to be blown over or capsized by the intrusion of cattle or marauders.

THE BEE TENT IN IRELAND.

In accordance with the arrangement made at Maryborough, alluded to on page 84, our Tent was duly pitched at Parsonstown, on the 25th ult., in Moor Park, near Oxmantown Bridge, a short distance from the railway station, kindly lent by Colonel Hackett, who took a lively interest in the proceedings. Large posters had been freely distributed throughout the neighbourhood, announcing the coming of the Tent, under the distinguished patronage of the Earl of Rosse; and every possible preparation had been made by the Rev. J. M. Aldridge, of Eyrecourt, Co. Galway —the indefatigable promoter of the exhibition—to ensure a large and successful gathering. The 'poster' announced the object of the visit as 'instructive' in bee management by 'lectures and practical operations;' invited bee-keepers to bring their hives, and have the honey removed for themselves, and the bees disposed in a new hive for future profit; and promising three demonstrations, at each of which they would be shown 'the best method of keeping bees, how to drive bees from hive to hive, how to take honey from straw hives without smothering the bees, how to cause swarming artificially, how to transfer both combs and

bees, how to unite two or more hives of bees, and how to extract the honey without injuring the comb.'

Thanks to the interest thus created, there was no lack of bees, hives, or apparatus; and but that the proceedings were marred by a most inopportune downpour of rain, the exhibition would have been an unmitigated success. The manipulations had been advertised for 1.15, 2.45, and 5 P.M., but it was near 3 o'clock before it was possible to do anything comfortably, and the company expected at about that time appeared in diminished numbers; nevertheless there was a fair muster, all things considered, and a great deal of interest was excited. The Earl and Countess of Rosse and party honoured the exhibition by their presence, the ladies doing splendid service to the cause by their extremely pertinent questionings, thus eliciting the information in regard to bees that appeared to be most needed in Parsonstown district. In our report of the Clonmel show we accidentally omitted mention of the exceedingly good service rendered to 'the tent' in Ireland by the assiduous exertions and painstaking forethought of Brother Joseph of the Abbey, Loughrea, Co. Galway, who brought with him a unicomb hive, with Ligurian queen, bees, and brood, which created great interest there, and which he kindly left in our charge for exhibition at Maryborough, where it also did good service; and here again at Parsonstown, with its owner to the fore, it was found most useful and instructive.

Brother Joseph brought with him a whole load of hives and appliances, and was indefatigable in his endeavours to persuade his countrymen into the better way of bee-keeping. He showed a set of combs, formed on foundation that he had used for several years on the doubling principle, for extracting purposes, and they had done him good service, enabling him to take from 80 to 100 lbs. of honey per hive during even a short harvest, while in a good year the quantity would be doubled or trebled.

To the Rev. J. M. Aldridge, of Eyrecourt, Co. Galway, is due the chief merit of the success that was achieved, for, by his example and personal pluck, he had stirred up the district and caused the display. He brought several hives and bees to the Tent, and showed great anxiety for the spread of the modern system of bee-keeping of which he had been pioneer. Many others most willingly contributed to the success of the day by the loan of bees and hives for driving, uniting, transferring, and depriving, all of which operations were fully carried out to the immense satisfaction of the visitors. Bees and hives were also brought for manipulation by R. J. Crossdaile, Esq., and R. Waller, Esq., to whom many thanks are due for their kind and careful help.

We extract the following account of the Tent in Parsonstown from the *King's County Chronicle*:—

'Through the exertions of the Rev. Mr. Aldridge, vicar of Eyrecourt, the above Tent, now on a tour in Ireland, visited Parsonstown, on Wednesday, the 25th inst., and flew its flag in a field kindly lent for the occasion by Colonel Hackett, at Moor Park. In last week's *Chronicle* we drew attention to some interesting features in connexion with the present tour; and it may be no harm to add that the gentlemen, Messrs. Abbott and Carr, in charge of the Tent, give the interesting exhibitions, not with a view to pecuniary profit, but to arouse a wider interest in the "little busy bee;" and by simple, lucid demonstrations and explanations to induce many, hitherto practically ignorant, to study more closely the interesting science of bee-keeping.

'Messrs. Abbott and Carr gave three demonstrations on Wednesday last, and showed how simple it is to manipulate bees when we have got them under our command. They also transferred both comb and bees from a straw skep into a bar-frame hive; and explained the superiority of the bar-frame over that of the common skep. All those present appeared greatly interested, and many questions were asked and answered. One lady, more courageous than the rest—Miss Trench, of Cangour Park,—took a handful of bees from one of the manipulators, much to the amusement of the spectators. Among those present were the Earl and Countess of Rosse.

'We trust that this visit of the Bee-Tent to Parsonstown will create a greater interest in the science of bee-culture, and be the means of increasing the number of bee-keepers in the King's County.'

The next day found us *en route* for Newry, where, in the Market-place, in connexion with the Agricultural Show, our Tent was set up. Our bees in the meantime were deposited in one of the counting-houses in the Square; but the 'irrepressible urchin' found an opportunity for cutting through the canvas cover of the skep, and setting them at liberty, catching a tartar on his cheek for his pains. Everything that could be done to help us was readily performed, but the all-necessary bees had not been secured, though Mr. Marshall, the enterprising hon. sec. of the show had endeavoured to procure them. Good fortune, however, brought us into contact with a bee-keeper, who had been anxiously awaiting the coming of the Tent; and in him (Mr. James Shaw, of Priory House, Newry) we found a friend in need and in deed, and one most anxious for the introduction of the moveable comb system into his apiary. He very kindly gave us the use of his bees, and obtained the loan of a stock from his brother, who lives near, and thereby removed an anxiety which might have seriously interfered with the programme.

The incidents attending the show call for no special remark; they were of the usual character, created, as hitherto, most intense excitement, and furnished a topic for general conversation. The interest in the Agricultural and Bee Shows was shared by a Dog Show, held on the same day, in another part of the town—an evident mistake, and one that neither committee can wish to see repeated.

While at Newry we were most kindly entertained by Mr. Shaw, and had the pleasure of straightening his apiary, and that of his brother above mentioned. The hives, save such as were queenless, were full up with honey, and of great weight, for their size; they contained barely a hand's breadth of brood, and the bees were perforce lying about outside and under the hives. In most instances pieces of comb had been built in the folds of the sacking or carpet covering; but, as a rule, the bees were idle, not because there was nothing to gather, but simply from having nowhere to store honey if they collected it; and from having prevented the production of young broods by choking the combs with what they had

already taken into the hives. We have many times warned our readers of the dangers likely to arise from insufficiency of storage-room in hives during a honey glut; but nowhere have we seen such convincing proof of the truth of the theory as in Ireland, where, except in moveable-comb apiaries under intelligent management, the bees had become completely demoralised through super-abundance of income.

The Tent at Newry was visited by Mr. C. C. Russell, the hon. sec. of the Newtownards coming Show, to which we were next proceeding; and, having seen the nature of the business and its requirements, he was enabled to prepare for the Tent's reception in that ancient town. The Newry Show was held on Saturday, the 28th August; Sunday was a rest day, the afternoon of which was pleasantly spent under Mr. Shaw's hospitable roof, and Monday morning found us on the way to Newtownards, where our labours on behalf of Irish bee-culture were to close. Here we found abundant evidences of pre-arrangement. Prizes in money and hives had been offered for the best skeps of bees, the bees and combs to be transferred to the hives, which were of the Woodbury style, on legs; but, having been made from description, instead of from a pattern, were not all that could be desired; nevertheless, as bees had done exceedingly well in others of a similar make, they were held to be good enough for the occasion. Prizes had also been offered for the best exhibits of honey, that in sectional supers to have preference; and sufficient was exhibited to satisfy the visitors of the immense superiority of the system under which it was produced.

During Tuesday, which was a spare day, everything connected with the bee department of the show having been already arranged, we were the guests of Mr. Russell, in whose elegant home we received every possible kindness and attention; and Mr. Russell, being an advanced and advancing bee-keeper, gladly availed himself of our proffered services in his apiary. A skep covered with a wooden case we were not permitted to see, as it was intended for exhibition, and we were to be the judges at the show; but in other matters we were speedily 'high busy.' A Nutt's collateral hive received special attention. It stood in a house which, during the preceding winter, had been twice blown over, and had since done 'nothing,' though a few bees stowed in one of the side boxes had built a little comb. The general inference was that the queen had been killed by the rough treatment the hive had suffered, but investigation elicited the truth. The fall, or, to use a more correct 'Irish' term, the 'stopping so quickly' when blown over, had jarred the combs into a heap on one side of the hive, and they, notwithstanding the bad season (1879), being full of sealed honey, were a solid mass. The surviving bees built new comb in the vacant part of the hive, but, as at Newry, they had filled it so rapidly with honey that they had prevented breeding, except in a very trifling degree, so that they could not increase in numbers sufficiently to swarm or do other good service. They were, therefore, transferred forthwith to a frame hive, all the straight comb being tied into two frames, foundation being given in all the others; and they were promised a lot of condemned bees after the show when their owner had more time to obtain them. A visit to the bees in the mountains, where they were revelling amongst the heather and white clover, revealed a condition of things not easy to understand here: hives (there were two) filled with honey but with scarcely any bees in them and very little brood—the same old story,

> 'Ill fares the "hive," to hast'ning ills a prey
> Where wealth accumulates and "bees" decay.'

One of the hives had filled out four sections, which we removed, and others were in progress; and we took one frame of new comb filled with honey, and extracted a few pounds, for exhibition from others, packed up our spoils and returned to Newtownards with the first fruits, most agreeable to our hostess, of the modern system of bee-culture in that district.

The Bee Show was held in conjunction with the Newtownards Flower Show—an institution which has existed for a quarter of a century, and flourishes exceedingly. It was held, as of old, in the magnificent nursery grounds of Messrs. Dickson, and in addition to many items of farm produce, embraced dogs and horses, as well as bees, in its schedule as competitors for prizes. Our business, however, is with the bees, though we would fain pay a tribute of praise to the general excellence of the whole of the arrangements, and of sincere thanks for the careful attention we all received at the hands of the various committees. Having casually mentioned that at Long Sutton last year we paraded the show-ground with a swarm of bees on our hat, Mr. Russell hailed the idea as a splendid one to invoke the curiosity and interest of the visitors; and at the first driving, of which his own bees were the subject, a repetition of the experiment was insisted on and duly performed, the queen being secured by a silken thread pinned to the hat, to the great astonishment of the on-lookers, and, as a result, a very large audience at the next (the second) exhibition of manipulation.

The horse-jumping at four o'clock had, however, superior attractions for the many, and the third exhibition was but poorly attended as is usual under such circumstances; nevertheless, the show was a complete success. The hives that were transferred, like others we have mentioned, were nearly filled with honey, brood and bees being particularly scarce, a fact likely to militate against their successful wintering without further attention by their owners, who, in taking the honey from other hives should add the bees and brood they would otherwise waste, to them. In the honey classes very high praise is due to the beautiful exhibits of Captain Perry, of Ballymena, whose sections in (Abbott's) section frames were greatly admired. Those exhibited by Mr. Russell were also excellent, and the honey in frames shown by Mr. Tureton, of Rostrevor, was also good, but the combs were thin owing to there having been too many frames inserted in the super box.

The following are the awards :—

For best stock of bees in straw skep—1, C. C. Russell; 2, Hugh Milliken, Ballyrogan; 3, Alex. Snodden, Newtownards. Honey competition (open) in supers—1, Captain Perry, Ballymena; 2, C. C. Russell, Newtownards; 3, Archibald Tureton, Rostrevor. Finest quality of honey, in comb or otherwise, taken from bees without killing them (confined to competitors from County Down)—1, Archibald Tureton, Rostrevor; 2, C. C. Russell, Newtownards; 3, John Miller, Comber.

The *North Down Herald* makes the following remarks, which satisfactorily indicate the extent of the interest created :—

'The subject of apiculture is one which is rapidly coming to the front. With other valuable discoveries and improvements of the present age, we have brought under our notice a method of dealing with those interesting, useful, and industrious winged workers, whereby the cruel practice of taking away their lives, in order to obtain the results of their labours, is entirely obviated and also whereby the bees can be made a source of substantial profit.

'The announcement that an exhibition of bees would be an item on the programme was hailed with general satisfaction, and the tent erected for the purpose was crowded during the day. As we gave a lengthened description of the tent and manner of manipulating the bees in our last issue, it is not necessary here to enter into fuller details. The inner compartment was occupied by Mr. Chas. N. Abbott, of Southall, Middlesex, editor of the *British Bee-keepers' Journal*; Mr. Wm. Carr, of Manchester; and Mr. C. C. Russell, of Newtownards, the owner of the bees to be experimented with. The exhibition was certainly an astonishing one. With the utmost ease, after having introduced into the skep a small quantity of smoke, produced by burning a piece of brown paper, the bees were induced to leave it and take possession of an empty skep placed in a slanting position upon the edge of the old one, and open to the view of all. This part of the work was assigned to Mr. Abbott, who, divested of his coat, with shirt-sleeves rolled up, appeared thoroughly at home. It did seem as though he had cast some potent spell upon the bees. They clustered on his hat, perched upon his face and arms, and permitted him to lift them in handfuls as if they had been so many blackberries. Nor was Mr. Carr behind his associate. Parading slowly round the tent he explained, in an amusing and interesting manner, the structure and habits of the bee, its mode of treatment, &c.; affording, as he did so, ocular demonstration that bees may be handled with perfect freedom. It is only when crushed, according to his theory, that bees will sting. He carried them in his hand, *put some into his mouth*, allowed them to settle upon his face and neck, and all the while rattled off his jokes and good-naturedly answered all the questions with which he was freely plied. All present seemed well pleased, but we doubt whether all could be induced to try the experiment. We heard one gentleman humorously remark that while the whole thing was exceedingly nice he would prefer to employ a person to do it for him, provided he could get him for a reasonable salary. Many of the visitors passed their hands under the inner tent and allowed the bees to be placed in them.

'We are certain we have not heard the last of apiculture in our neighbourhood, and we are indebted to our townsman, Mr. Russell, for the trouble he has taken to provide so rich a treat. We are glad to find that he was so very successful in the bee and honey department, carrying off first prize for bees, and two seconds for honey.'

Friday morning found us on our way to Greenore, and Saturday morning dawned upon us at Holyhead, whence, after an eight hours' journey, per London and North Western Railway, we reached London about 1 p.m.

As the outcome of representations to the British Beekeepers' Association on the excellent condition of their apiaries, and their efficient aid at Clonmel, Newry, and Parsonstown, they have awarded silver medals to the Rev. G. A Procter, of Tullamelan, Co. Tipperary, and to Brother Joseph, of the Abbey, Loughrea, Co. Galway, which will be presented when duly engraved.

No better or more flattering evidence of the interest created by the tour of the Tent could be furnished than is contained in the following report of the doings at the Wexford Agricultural Society's Show in September. Mr. Traynor has been already mentioned as an active 'Cottager,' and has succeeded, after the lesson at Maryborough, in carrying out a satisfactory programme. We quote from the *Wexford Independent* :—

'A Bee Tent at Wexford has been procured by the Wexford Agricultural Society under the management of Mr. Boland, Enniscoultry, who spared no pains to make the bee exhibition a success. Large quantities of honey were exhibited by the local folk. A strange feature in the Bee tent was that of several sections of honey, containing each 2lbs., the bees build down to the very glass, several of them weighed exactly 2lbs. with the turn of the beam slightly in favour of the bees. The driving method was fully exhibited whereby large quantities of pure honey can be obtained without destroying the bees with sulphur fumes. The new comb foundation and wax-guides so essential in straight comb building were fully explained and exhibited. The whole operations were performed without the aid of veil or gloves. A gauze netting protected the spectators. The tent was under the management of Mr. Traynor, Tinahely, a cottage correspondent of the *British Bee Journal*, published by Abbott Bros., Southall, London. Mr. Traynor took the opportunity of *showing* results of what was done, as he believes there is very little use in *telling* the people what can be done. The bees in the bar-frame hives were lifted up from the frame and walked over the manipulator without in the least injuring him, the bees were brushed off the frames and pure honey extracted by one of Abbott's Little Wonders. As this was the first Irish bee tent ever in Ireland, a large share of interest was bestowed upon it. New methods of feeding from top of hives were fully explained. The bees were treated and lectured upon as if they had no stings at all. The tent left a very favourable impression of advanced bee-culture.'

(*To be resumed.*)

BRITISH DAIRY FARMERS' ASSOCIATION AND BEE-KEEPING.

An Exhibition of bees, hives, honey, and wax (promoted by the British Bee-keepers' Association) will be held in connexion with the Annual Show of the British Dairy Farmers' Association, at the Agricultural Hall, Islington, on October the 26th and following days. There are three classes for hives, six for honey, and one for wax; most of the classes are well filled, and some very largely. The various exhibits will occupy a space of nearly 300 feet run, by 3 feet in depth; and we have no doubt but that this exhibition will form a most attractive feature of the Show.

CONGRESS OF BEE-MASTERS AT COLOGNE.

I have just returned from the Congress of Bee-masters of the German and Austrian empires held at Cologne, from the 7th to 10th of September; and in case you should receive no better account than this from any of the English gentlemen there present, you may like to have the following brief description of it for your *Journal*.

The occasion was somewhat more than ordinarily interesting, for it was the twenty-fifth anniversary of the Congress. As an evidence of the active interest taken by Government in the Congress and its work, the Burgomaster of Cologne acted as its President, and the Ministers of Public Instruction and of Agriculture and Commerce were both represented by high officials. I arrived at Cologne on Monday, 6th September, in company with Mr. Dennler of Enzheim, who honoured us with a visit last year at London.

The proceedings commenced on Monday evening by an unofficial meeting of those who had arrived from all parts of Germany and Austria to take part in the Congress. Among them were many who have a European reputation as bee-keepers, and I may specially notice the great Dzierzon, the Baroness Von Berlepsch, Herr Vogel (author), and the Pasteur Rabbow, of Hohendorf in Pomerania. Dzierzon, I may observe, is *not* a pasteur, as stated at page 96 of last month's *Journal:* he *was* a Roman Catholic priest, but he has given up performing any ecclesiastical duty, and does not even wear the dress of a clergyman.

The Exhibition opened on the morning of Tuesday the 7th, and resembled very much all exhibitions of the same description. If I may offer criticism on it, I should say that practical utility was not sufficiently kept in view by the greater number of the exhibitors, who rather sought to catch the eye by the attractiveness of their articles. I may mention with satisfaction that two out of three of the exhibitions which gained silver medals (of which only three were awarded) were made up largely of articles which had at least a portion of their origin in England, Mr. Neighbour having carried off one of them for an excellent collection of apicultural instruments and super honey, and Mr. Dennler having also a silver medal awarded to him for a dozen of Mr. Abbott's honey-boxes magnificently filled, and an extractor, the idea (though not the mechanism) of which was borrowed from that of Mr. Cowan, which gained a prize at London last year. I shall refer to this extractor hereafter. For the rest, there were some well-stocked hives of Cyprians and Italians in the courtyard, with some well-made portable hives for transporting bees or queens from place to place. There were huge glass bells, nearly two feet high, well filled with comb, very pretty to look at, but not half so practically useful as our honey boxes. This, indeed, the jury fully recognised in their awards to Messrs. Dennler and Neighbour. There were also some ingeniously arranged devices in comb exhibited by Pasteur Rabbow, the bees having been made to build into moulds or shapes, which were afterwards detached, leaving the shapes of comb, like shapes of blanc-mange, on a dish. There were also some capital masks, plenty of good comb-foundation, and a number of hives, the prices of which ranged generally from seven to fifteen shillings, a few fancy hives only being higher in price. The stock of honey and mead in jars and bottles was very large. All this was, however, nothing more than may be seen at any bee show.

The important part of the proceedings were the reunions, where papers were read and speeches made. The first of these commenced at ten a.m. on Tuesday, and lasted till two o'clock. It was opened by the Burgomaster, who in a short speech addressed the meeting, expressing a hope that the fiftieth Congress might be an international one, as there were few countries which now did not take some interest in bee-keeping. Then, amidst the applause of the whole meeting, the delegate of the Minister of Agriculture and Commerce called up Herr Schmied of Eichsteid, who is the permanent Vice-President of the Congress, and, after complimenting him, decorated him with the order of the Crown, sent expressly to him by the Emperor.

The real business of the meeting then began, Dzierzon, who was most warmly applauded, addressing the Congress at some length. Dr. Dzierzon dwelt on the yet undeveloped state of bee science, and the necessity of close and patient study and watching, as well as practical application, if we would arrive at results worthy of the end at which we strive. 'What we know as yet,' he exclaimed, 'are like a few shells picked up by a child on the sea-shore, which give but little idea of the wealth that the sea contains.' Herr Vogel, whose book on the bee was rewarded with the annual gold medal of the Congress, followed next, taking up the question of a uniform or standard size of frame for all Germany. This has been long discussed, and has resulted in a gradual diminution of the size of frame. The time was thought to have arrived for definite action, and the size of frame was, after long discussions in the Congress, finally fixed at 23½ centimètres (or 9 inches) broad, with a depth of 36 centimètres (or 15 inches) for the body of the hive, divided into two frames, each of 18 centimètres (nearly 7½ inches) deep. This hive, however, admits of being built up to any height the amount of honey-gathering justifies. There are usually two rows of ten to twelve frames, or three rows of eight frames, one above the other, in each hive, making from twenty to twenty-four frames of the above size in each hive.

You are aware that in the German hives the frames *always* stand *across* the door, not at right angles to it. In this principle they exactly resemble Mr. Abbott's Combination Hive. There was only one German hive in the exhibition which had its frames at right angles to the doorway. And here I may mention a Swedish hive which resembled very much one of Mr. Abbott's Combinations, and which was furnished with a division-board to enable the frames to be put back from the entrance in winter. There was a tunnel leading from the entrance to the division-board, giving ingress and egress to the bees, as well as for the ventilation of the hive; the space between the end of the hive and the division-board was then filled with chaff well rammed home. This seemed to me a capital idea for keeping hives warm in winter.

It is no doubt a great advantage in Germany that practically one size of frame is adopted by all bee-keepers in all parts of the country. I am myself strongly impressed with the practical utility of the German hives. I have this summer been working very much with some which are known as the Baden or Black Forest hives. They seem to me to present some very great advantages, both in regard to manipulation and supering. I am inclined to think that bees also winter very well in them. First, as regards manipulation, the frames being drawn out by a pair of strong pincers from the rear of the hive, a small puff of smoke easily drives the bees downwards to the front, and in this way I really cannot remember ever having been once stung in opening a hive, which I have been doing lately every day: then the frames have only a small bearing at the ends, and are very easily detached from the propolis. Thirdly, the brood is invariably found in the front, and notably the lower front of the hive. In this way, for extracting, you may take out the eight upper and four lower frames from the rear, with the almost absolute certainty of finding no brood in them. The frames being of small size, are put at once into the extractor, the honey is taken out, and the frames are

replaced in the hive without any derangement of the brood or annoyance to the queen. Then for supering, the narrow hive seems to concentrate the heat and send it into the supers, which the bees take to at once, while the broad shallow frames of the Woodbury would seem to fail in this particular. I can only say that two Alsatian gentlemen to whom I gave a number of Mr. Abbott's excellent sectional supers, have been showing me magnificently filled honey-boxes all the summer from their Baden hives, while I never have been able to get a bee to go into mine except for promenade purposes. I am disposed to think, too, that bees winter better in a deep narrow hive. By leaving them a certain number only of frames filled to all their depth, the bees need never change from frame to frame, but always keep near their food; and so it comes to pass that after considerable experience, I have come to be very fond of these small frame hives, which are so handy for storing and manipulation. The only modification I should like to make in them would be the adoption of the quilt in winter.

I would now add a few words on Mr. Dennler's extractor. It was exteriorly of the ordinary form, the motive power being placed below the body of the machine, and the centre pivot turning in a socket below all; so that all the weight of the frames in the interior rested on the centre pivot, and all straining was avoided. The cages for containing the honeycombs for extraction are raised about 6 inches above the bottom of the receptacles, so as to allow of at least 25 lbs. of honey being extracted without drawing it off. The whole of the apparatus for turning is very solid and well made. The cages or receptacles for the combs are three in number, forming a triangle inside the receptacle; and this, I think, is its only fault, for with three frames there is no counter-balance on the pivot, and this must eventually cause an uneven and wobbling motion. It could be as easily made with two or four cages, and it would then be better; otherwise it admits of the frames being reversed like in Mr. Cowan's extractor, which is done by lifting each frame up about a quarter of an inch, turning it, and letting it drop into its place. This action is exceedingly simple, takes no appreciable time to put in motion, and is not exposed to any chance of derangement. As the machine exhibited has extracted nearly a ton of honey this year, its efficiency may be said to have been thoroughly tested and established. It was very greatly admired and praised by Dzierzon, and many other experienced bee-keepers.

Among other subjects of interest from a practical point of view discussed by the Congress, was that of the use of perforated zinc as a queen-excluder. This was introduced by Herr Gühler, who very clearly explained the great results which might be obtained by the use of it, in reference to the checking of swarming and the production of honey. Several bee-masters followed on this subject, saying that perforated zinc was changing the whole system of apiculture, and the principles on which it was conducted from a scientific point of view. It may be added that the sale of perforated zinc at the exhibition was very large, almost more than that of any article. The holes are the same depth as ours, but have a greater breadth, at least one and a half to one of ours.

Professor Donhoff read a very interesting paper on the physiology of the bee, which was warmly applauded. Herr Frey of Murenberg did the same in reference to foul brood, which he treated ably. Herr Deichart, the President of the Society of Apiculture in Hesse, read a paper on 'Wintering Bees,' the chief practical hint I gained from which was, that it was well not to leave colza honey in a hive for winter, as it crystallised very readily in the hives, and was not made easily available to the bees when in that condition. Herr Schzen spoke on the introduction of Italian and other foreign queens. He appeared to think that the chief advantage gained was in the infusion of fresh blood into an apiary, and that this would be as readily effected by any other exchange of queens not necessarily of another race.

The next Congress was then settled to take place at Erfurt in 1881; and either at Buda-Pesth or Frankfort-on-the-Maine in 1882.

There was another point of interest brought out in the discussions. You are perhaps aware that in Hanover, where there is an immense trade in exported honey, the practice is to destroy one-third of the hives every year, and take all the contents. This practice is justified by the people on the ground that they have too many swarms, and that they would be overstocked with bees otherwise. In fact, they say that in a good year each hive will give three swarms and 100 lbs. of honey. Moreover, they say, by constant renewal of the combs, they avoid foul brood, and have a much longer and finer race of bees. Pasteur Rabbow violently attacked the whole system as being cruel, unnecessary, and not really economical. Herr Schzen, the Editor of the *Hanover Bee Journal*, replied to him: 'We are not cruel, but what are we to do with our bees? We have 600,000 hives every year to dispose of, and if you will come in the autumn, we will only too gladly drive the bees, and sell them to you for a mark and a half (eighteen pence) each colony.' It is a question for our enterprising bee-merchants whether it might be profitable to purchase bees in autumn at this price, feed them through the winter, and sell them in spring. It may be observed that Pasteur Rabbow was right, and that by using frame hives and checking the laying of the queen by the use of perforated zinc dividers, the number of swarms might be diminished, and the income of honey increased in proportion. The hives used in Hanover are tall conical skeps, with the entrance near the summit.

The show remained open and the meetings continued daily till Friday, when the prizes were given, the gold medal going with universal applause to Herr Fred. William Vogel, for his recent work on bee culture; Mr. Dennler and Mr. Neighbour, and one other, receiving silver medals; and many others diplomas of merit.

So ended a very interesting visit, during which I visited also the Industrial Exhibition at Dusseldorf. Perhaps the most interesting part of the exhibition was the pleasure and honour of meeting renowned bee-keepers like Dzierzon and the Baroness Von Berlepsch.—G. J. Pearson, *The Hohwald, near Barr, 13th Sept.* 1880.

BRITISH BEE-KEEPERS' ASSOCIATION.

Committee Meeting held at 105 Jermyn Street, St. James's, Wednesday, Sept. 15th. Present Mr. T. W. Cowan (in the chair), R. R. Godfrey, J. M. Hooker, F. Cheshire, Rev. E. Bartrum, and Rev. H. R. Peel, Hon. Sec. The minutes of the last meeting having been read and confirmed, the Secretary reported that he had received letters from Mr. Abbott, Mr. Steele, Messrs. Neighbour and Son, and Mr. S. J. Baldwin, stating they would be pleased to contribute specimens of their goods for the purpose of exhibition at the South Kensington and Bethnal Green Museums. Promises of additional contributions were also received from Mr. Hooker and Mr. Cheshire. It was resolved unanimously, 'That in accordance with the request, as stated in the letter received from the Science and Art Department on the 17th of August, the Hon. Sec. and Mr. Cheshire should have an interview with Mr. Thompson, one of the Assistant Directors of the South Kensington Museum, and make the necessary arrangements with him for the exhibition of two collections of specimens of the best hives and other apparatus used in bee-culture, as desired by the Science and Art Department.'

It was also resolved, 'That the next quarterly meeting should be held on Wednesday, Oct. 27th, the second day of the Annual Show of the British Dairy Farmers' Asso-

ciation at the Agricultural Hall, Islington.' The Rev. E. Bartrum promised to read a paper on 'The Stewarton Hive,' and the Secretary was requested to make the usual necessary arrangements in connexion therewith.

The schedule of prizes for the South Kensington Show, to be held next year, was discussed, and various amendments suggested. It was resolved, 'That the same should be brought forward for discussion at the next meeting.' The balance-sheet for the month ending August 31st was read, showing a balance in hand of 2*l.* 10*s.* 3*d.* The Secretary reported that the low state of the finances was principally due to the fact that upwards of 25*l.* was due from members whose subscriptions were in arrear, the same having been due on the 1st of May last. Resolved, 'That the Secretary do send a circular to all members in arrear, making application for their subscriptions.'

LINCOLNSHIRE BEE-KEEPERS' ASSOCIATION EXHIBITION AT BOSTON.

The fifth annual exhibition of this Association was held at Boston on Thursday the 9th of September, under the auspices of the Mayor. The weather was all that could be desired, and so conduced much to the success of the show, which was visited by the Mayor and Mayoress of Boston, Lieutenant-Colonel Moore, Mrs. and the Misses Moore of Frampton Hall, B. G. Garfit, Esq., W. G. Pilcher, Esq., G. W. Thomas, Esq., many of the clergy and leading families of the town and neighbourhood, and a large number of the public generally.

The event was ushered in by a most interesting address by the Rev. Herbert R. Peel of Abbot's Hill, Hemel Hempstead, the subject being 'Bee-keeping in England in 1880,' delivered on the evening of the 8th at the Assembly Rooms, which had been kindly placed at the disposal of the Committee Association by the Mayor of Boston. Lieutenant-Colonel Moore, of Frampton Hall, in the unavoidable absence of the President, the Right Rev. the Bishop Suffragan of Nottingham, kindly presided, and was supported by the Mayor of Boston (James Thorns, Esq.), the Rev. J. L. Sisson, of Edingthorpe Rectory, Norfolk, A. M. Adams, Esq., M.D. Boston, Mr. J. G. Desborough, Stamford; Mr. John Bolton, Grantham; and the Hon. Sec. of the Association, Mr. R. R. Godfrey.

The audience was very large, amongst whom were the Mayoress and the Misses Thorns, Mr. J. Thorns, Jun., and Mrs. Thorns, Mr. and Mrs. Mawson, T. Slator, Esq., J.P., J. Kenington, Esq., J.P., Mr. C. Pocklington, Mr. C. Lucas, Mr. Perry, Mr. Morris, Mr. and the Misses Small, Mr. H. Yates, of Grantham, Mr. Sells, of Uffington, Mr. Bywater South, and many veteran bee-keepers from all quarters.

The Chairman remarked he had been requested to preside that evening in the absence of the worthy President of the Association, the Bishop Suffragan of Nottingham. He regretted very much the absence of that gentleman, because he always introduced a large amount of geniality into any meeting at which he was present. It was not necessary for him to say many words in introducing the lecturer to them, for they were all, as he was, very anxious to hear him, but there were one or two words he should like to say. He was sorry he did not know more about bees, but for some reason or other they always exhibited a great antipathy towards him. It might be his own fault, but they always stung him whenever they got the opportunity; therefore he had not cultivated their acquaintance very largely. But although he had not had much practical experience amongst these insects, he had read a good deal about them. Bees were mentioned in the earliest of histories, and if they looked into the Book of Books they would find that bees were referred to at the commencement, and the greatest boon ever offered to the children of Israel was to be taken to a land 'flowing with milk and honey.' He need not tell them how many philosophers had written about bees, and referred, as an instance, to Virgil's poems. Many lessons could be learned from bees, as well as the wonders of a Divine providence. He had received letters from the Sub-Dean of Lincoln (Canon Clements), the Rev. W. V. Turner of Bardney, and T. C. Garfit, Esq., regretting that they could not be present. He had very great pleasure in calling upon Mr. Peel to address them.

[The most interesting address of Mr. Peel is too valuable to permit of curtailment, and space not permitting its publication this month, we have printed it in separate form for private distribution, but it will appear *in extenso* in our next.—Ed. *B. B. J.*]

The Exhibition.

On Thursday, the fifth great annual exhibition of bees, honey, hives, and practical manipulations, was held in the 'Welcome,' Bargate, and the field adjoining, kindly lent for the occasion by Mr. Charles Smith, of Kirton. A large number of people visited the grounds, and the tents were well filled from the opening of the gates at noon, until seven o'clock in the evening. The exhibits were good and numerous, entries being made in every class with the exception of three. Mr. G. F. Barrell, of Spalding, obtained first prize in class 1, for his exhibit of Ligurian bees, shown in an observatory hive. In class 3 specimens of the Hungarian bee were shown by Messrs. Neighbour and Son, of London, and some fine specimens of the Cyprian bee were exhibited by Abbott Bros.

In the honey department there was a good display of supers, notably some beautifully finished sections exhibited by the Rev. Herbert R. Peel, of Abbot's Hill, Mr. Tuck, of Upwell, and Miss Gayton, of Great Hadam; also a splendid Stewarton super, exhibited by the Rev. E. Bartrum, of Berkhampstead, and some fairly finished glass supers exhibited by cottagers. The extracted and run-honey exhibits were large, and the quality fine. Mr. T. Sells, Uffington, Mr. Roberts, Belvoir, the Rev. W. A. Frith, Welby Grantham, Miss Gayton, Great Hadam, Mr. S. Lee, Coningsby, being well to the fore. Mr. T. Sells was successful in winning the Silver cup of the Association for the first time; also in securing the Plate Prize presented by Mr. Sells; he had a close competition in Mr. Roberts, and it would not be a surprise to see at the next exhibition a change of places with these two for the cup. It is gratifying to know that cottagers living at Bardney and Southrey were successful competitors in this department. Such a result is mainly owing to the efforts of the Rev. W. V. Farmer, vicar of the parish, whose example in this work it would be well for others to follow.

In the hive, &c. department was a large and varied collection of the latest improvements in hives. Supers and extractors with an endless display of bee-appliances, Messrs. Abbott Bros., Messrs. Neighbour & Sons, and Mr. Steele being large exhibitors. In the class for extractors there was great competition, no less than nine machines entered: the first choice being Mr. Cowan's 'Automatic,' the second Mr. Abbott's 'Little Wonder,' the third Mr. Steel's, H.C, Mr. Holland, H.C., Mr. Walton, all really good machines. Class for cottagers' hives was unusually full and well contested, cheaper and better rarely seen. The result was a ready sale and a clear out.

A large collection of bee flora was on view in the tent, with very graphic and detailed particulars attached to each object. Much regret was felt by the Hon. Sec. and the members of the Committee that there were no bee-keepers in Boston that could compete for the Vicar's prize. The prize offered by the Mayor for any new invention was well contested for. On referring to the list of awards it will be seen that several persons resident in the neighbourhood took prizes, and in addition to these competitors living at Horncastle and Grantham and Louth were not unsuccessful.

Mr. C. H. Clarke, of Long Sutton, exhibited a splendid comb in a glass-case, worked on Abbott's comb-foundation, the results of the Association's visit there last year. Mr. Clarke stated that he, in company with Mr. Measures, had driven the bees from no less than forty hives this year which otherwise would have been murdered by aid of the sulphur pit.

At intervals during the day, manipulations with live bees took place in a tent especially erected for the purpose, and lent by the British Bee-keepers' Association; also in the open; and judging from the many visitors who swarmed close up to the manipulators, they had in a very short time learnt to know there was not so much to fear from bees as they had thought. The process of driving the bees was fully explained and illustrated by J. G. Desborough, Esq., of Stamford, Rev. J. Lawson Sisson, of Edingthorpe Rectory, North Walsham, Mr. Plowright, Mr. Yates, and Mr. Baldwin, the expert from the Association: and much surprise was manifested at the power the apiarian had over his bees. One of the hives driven was from a wicker coal-scuttle, with a piece of drugget stretched on the outside, belonging to G. F. Barrell, Esq., of Spalding, the history of which was a curious one. The queen was a pure Ligurian, and the hive swarmed and flew away. He advertised for its return, and found it had been taken by a labourer in a village two miles away, who had nothing ready to put it in, so he hived it in a wicker coal-scuttle, and put rhubarb leaves round it to keep out the weather. This was in 1879. Mr. Desborough managed to drive this hive, and transferred the combs to a bar-frame. The bees were numerous, and it was a capital stock.

As is usual, the manipulation tents proved the most attractive, and great was the interest manifested: visitors who witnessed the first drive might be seen as eager at the closing one. The fact that gentlemen such as the Rev. J. L. Sisson and Mr. Desborough can give such successful demonstrations as they did, and that Mr. Yates and Mr. Plowright can do the 'Wildman' feat, would go very far towards clearing the mist from the minds of the most sceptical about bees. Mr. C. N. Abbott (Editor), who was announced to be present to take part in the manipulation, was, we regret to learn, unhappily prevented.

The following gentlemen officiated as judges:—Hives and bees: Rev. H. R. Peel, Rev. J. Lawson Sisson; J. G. Desborough, Esq.; and Henry Yates, Esq. Honey: Rev. W. V. Turner; G. Brett, Esq.; J. Plowright, Esq.; J. Bolton, Esq.; and G. F. Barrell, Esq.

Much credit is due to the Hon. Sec., Mr. J. Best, Hon. Sec. for the Boston district, and the Committee, for the arrangements made. The preparations for the exhibition were kindly undertaken by Mr. J. Best, under the superintendence of the Hon. Sec., Dr. Measures, Long Sutton, G. F. Barrell, Esq., Spalding, Mr. Bywater, Louth, and Mr. Sells, Uffington District Hon. Sec., also rendered great aid. The staging of exhibits was intrusted to Mr. J. Boulton, Mr. Yates, Mr. Barnes, Mr. Roberts, the Rev. W. V. Turner, Bardney, Mr. Brett, and Mr. Plowright; and it is through the untiring efforts of this band of workers, that the Show was so great a success.

Thanks are due to the Mayor of Boston for the very liberal assistance he has given to the Society, for the thoroughly kind manner he throughout received the committee, and the warm interest he took in the whole proceedings.

The following are the awards:—

Bees.—Class 1—For the best specimen of Ligurian Bees, to be exhibited with the queen in an observatory hive: 1st, G. F. Barrell, Spalding, *1l.*; 2nd, Messrs. Abbott, Bros., London, 10*s.*; 3rd, withheld. Class 2—For the best specimen of English Bees, to be exhibited with the queen in an observatory hive; 1st, T. Sells, Uffington, Stamford, 10*s.*; 2nd, Messrs. Abbott, Bros., 7*s.* 6*d.*; 3rd, R. R. Godfrey, Grantham, 5*s.* Class 3—For the best specimen of any distinct variety of Honey Bees, other than Ligurians or the British Black Bees: 1st, Messrs. Abbott, Bros., *1l.*; 2nd, Messrs. Neighbour and Son, London, 10*s.*; 3rd, withheld.

Honey.—Class 4—For the largest and best exhibition of Super Honey, the produce of one apiary: 1st, Rev. H. R. Peel, Hemel Hempstead, *1l.*; 2nd, Rev. E. Bartrum, Berkhampstead, 15*s.*; 3rd and 4th, withheld. Class 5—For the best Glass Super, over 20 lbs. nett weight: No entries. Class 6—For the best Glass Super, under 20 lbs. nett weight: 1st, Thomas Sells, 10*s.*; 2nd, William Willey, Bardney, 7*s.* 6*d.*; 3rd, Thomas Sells, 5*s.*; 4th, John Willey, Southrey, 2*s.* 6*d.* Class 7—For the best Super of Honey (the super to be of wood, or wood in combination with glass or straw): 1st, H. Tuck, Upwell, Wisbech, 10*s.*; 2nd, John Jackson, Skirbeck, 7*s.* 6*d.*; 3rd and 4th, withheld. Class 8—For the best exhibition of Honey in Sections (each section not more than 3 lbs. in weight, the total weight of each entry to be not less than 20 lbs.): 1st, H. Tuck, 10*s.* and silver medal; 2nd, Rev. J. L. Sisson, Edingthorpe Rectory, North Walsham, 7*s.* 6*d.* and bronze medal; 3rd, Miss Gayton, Hertfordshire, 5*s.* and certificate: the medals and certificates presented by the B. B. K. A. Class 9—For the best Straw Super, by a cottager: 1st, Mr. W. Martin, Hampstead, 7*s.* 6*d.*: 2nd and 3rd, withheld Class 10—For the best glass of Extracted or Run Honey, of not less than 5 lbs. nett weight (quality to be the chief point of excellence): 1st, Thomas Sells, 10*s.*; 2nd, Rev. W. A. Frith, Welby Rectory, Grantham, 7*s.* 6*d.*; 3rd, J. H. King, Wrangle, 5*s.*; 4th, John Willey, 2*s.* 6*d.* Class 11—For the best and largest exhibition of Extracted or Run Honey, in glass or other jars: 1st, Thomas Sells, *1l.*; 2nd, Thomas Roberts, 15*s.*; 3rd, Miss Gayton, 12*s.* 6*d.*; 4th, Shadford Lee, Coningsby, 10*s.*; 5th, Rev. W. A. Frith, 7*s.* 6*d.*; 6th, Thomas Sells, 5*s.* Class 12—For the finest sample of pure Bees-wax, in cakes of not less than 2 lbs.: 1st, H. Tuck, 5*s.*; 2nd, Thomas Sells, 2*s.* 6*d.* Class 13—For the best Liqueur, Wine, or Mead, made from honey, with the recipe attached: 1st, Thomas Sells, 10*s.*; 2nd, H. Tuck, 5*s.*

Hives.—Class 14—For the best Hive for observation purposes: 1st, Messrs. Abbott, Bros., *1l.*; 2nd, withheld. Class 15—For the best and most complete Hive, on the moveable comb principle, with arrangements for storing surplus honey: 1st, Messrs. Neighbour and Son, *1l.*; 2nd, Messrs. Abbott, Bros., 10*s.*; 3rd, R. Steele, Fowlisby-Dundee, 5*s.* Class 16—For the best complete Hive, on the moveable comb principle, suitable for cottagers, price not to exceed 8*s.*: 1st, R. Steele, 15*s.*; 2nd, F. Lemare, Guildford, Surrey, 10*s.*; 3rd, Messrs. Abbott, Bros., 7*s.* 6*d.*; 4th, Mr. McGregor, Banchory, Aberdeen, 5*s.*; 5th, Mr. J. H. King, H. C. Class 17—For the best and cheapest Straw Skep of any description: 1st, Thomas Sells, 7*s.* 6*d.*; 2nd, Messrs. Neighbour and Son, 5*s.*; 3rd, William Forman, Louth, 2*s.* 6*d.* Class 18—For the best and cheapest Supers for general use in an apiary: 1st, Walter Holland, Croydon, 7*s.* 6*d.*: 2nd, R. Steele, 5*s.*; 3rd, S. J. Baldwin, Norwood, 2*s.* 6*d.* Class 19—For the best Honey Extractor: 1st, T. W. Cowan, Compton Lea, Horsham, *1l.*; 2nd, Messrs. Abbott, Bros., 10*s.*; 3rd, R. Steele, 5*s.*; 4th, W. Holland, H. C. Class 20—For the best and most complete Collection of Hives, Bee-furniture, and Apiculturalists' Necessaries: 1st, Messrs. Abbott, Bros., *1l.* 10*s.*; 2nd, R. R. Godfrey, *1l.*; 3rd, withheld.

Objects and Plants.—Class 21—For the best and most interesting Collection of Natural Objects, Models, or Diagrams, connected with apiculture: 1st, Messrs. Abbott, Bros., *1l.*; 2nd, D. J. Godfrey, 15*s.*; 3rd, withheld. Class 22—For the best and largest display of Honey-producing Plants, in a dried state or otherwise, such plants to have a card attached, stating time of flowering, duration of bloom, and any other particulars calculated to be of interest to bee-keepers: 1st, Mr. Ingram,

Belvoir, Book, *Langstroth on Bees;* 2nd, R. R. Godfrey, Grantham, current vol. of *B. B. Journal.*

Special Prizes.—One guinea presented by the Vicar of Boston (the Rev. G. B. Blenkin, M.A.) for the best exhibit in Class 4, by residents of the parish: No entries. Piece of plate, value 1*l.* 1*s.*, presented by Mr. Sells, of Uffington, for the largest exhibition in all or any of the of the honey classes, of honey taken without destroying the bees, who shall be a member of the Association, resident in the county: Thomas Sells, jun. Abbott's Cottager's Standard Hive, presented by C. N. Abbott, Esq., Southall, London, for the best exhibit in Class 8, who shall be a member of the Association, resident in the county: No entries. Current Volume of *B. B. Journal,* presented by Mr. R. R. Godfrey, Grantham, for the best exhibits in classes 5, 6, 7, 8, and 9, by a cottager, who shall be a member of the Association, resident in the county: Thomas Sells. Silver Cup of the Association, open to members only, resident in the county, for the best and largest exhibition, in all or any of the honey classes, of honey taken without destroying the bees, the cup to become the property of such member who shall win it three times: Thomas Sells. Special prizes presented by the Mayor of Boston (James Thorns, Esq.), for any new invention calculated in the opinion of the judges to advance the culture of bees: 1st, G. Bywater, Louth, 10*s.*; 2nd and 3rd, Isaac Plowright, Grantham, 7*s.* and 4*s.* H. C. J. Plowright, Queen Cage, H. C.; J. Plowright, Bar Frame with draught preventer.

DEVON AND EXETER BEE AND HONEY SHOW.

[*Communicated.*]

The seventh exhibition of the Devon and Exeter Bee-keepers' Association was held in the grounds of the Training College, Exeter, on the 3rd ult. Brilliant weather did much to ensure a fashionable attendance, and the increasing interest connected with the subject of bees and their produce added not a little to the charm of the gathering. Devonians have long taken a leading part in matters apicultural, and the name of the late Mr. Thomas Woodbury, of Mount Radford, has linked Exeter most intimately with everything appertaining to advanced bee-culture. It was he who invented the bar-frame hive which still bears his name, and who, moreover, did much to popularise the Italian bee; while he never wearied of impressing upon people in general the homely truth that the busy little honey-gatherer is, as Plutarch tells us, 'a magazine of virtues.' There are still in Devon many zealous disciples of this worthy bee-master, men like Mr. George Fox, of Kingsbridge, who can hold his own with the leading apiarists at international gatherings. It is only natural, therefore, that the Devonshire Bee-keepers' Association should receive substantial support, and the best evidence that it does so is to be found in its list of officers for the present year, namely:—President, the Right Worshipful the Mayor of Exeter (W. Horton Ellis, Esq.) Committee—Rev. J. G. Dangar, Rev. J. Dickenson, Mr. F. B. Fox, Rev. E. I. Gregory, Rev. J. R. Neame, and Rev. P. Williams. Hon. Treasurer, Mr. R. J. Gray. Hon. Secretary, Mr. W. N. Griffin, of Rock House, Alphington. The aim of the Association, as our readers are doubtless aware, is principally to encourage and advance bee-culture in the county of Devon; and the show which took place on the 3rd ult. may be described as one of a number of means put forth by the Committee in order to effect so desirable an object.

The Devonshire Association was established in 1875 mainly through the exertions of Mr. W. N. Griffin, of Alphington, who, though young, is one of the most enthusiastic and skilful apiarians in the West of England. This was the first occasion on which the committee had ventured to hold an independent exhibition, having on previous occasions been associated with the Devon and Exeter Horticultural, the Western Horticultural, and some similar societies. The result of the experiment showed that the Society has become quite strong enough to pursue a successful career on its own merits; and Mr. Griffin, its secretary and founder, and the other members of the managing committee, are entitled to congratulate themselves upon what they have achieved. Competent judges declared that the Show, generally speaking, was one of the prettiest and most complete they had seen in this country, excepting those of the British Bee-keepers' Association. Every department of bee-keeping was well illustrated, in some instances, it is true, on a small scale; still, all that could be required by cottagers, or by amateurs with well-filled purses, was to be seen.

The schedule of prizes for the meeting of the 3rd ult. contained 21 classes; and the awards, which were still more numerous, included elegant claret jugs, given by the Mayor and the Sheriff. The competition was excellent in most of the classes, and afforded ample evidence that Devonshire bee-keepers are still assiduously applying themselves to their favourite pursuit. Honey is, of course, the bee-keeper's chief desideratum, and of this there was enough and to spare. The prize for the best harvest of comb honey from one stock of bees, as well as that for the best super of comb honey, were both taken by Mr. G. M. Walsh, whose exhibits gave evidence of an abundant harvest. The combs were as straight as a line, the wax almost as white as snow, the honey beautifully clear, and the cells perfectly sealed. The local prizes—the claret jugs before referred to—were both won by Mr. W. N. Griffin, the energetic honorary secretary. There was an extensive show of run honey in glasses, and a very fair display of bees' wax of prime quality. Cottagers did not come out in very large numbers, and it was apparent from their exhibits that there remain many points in which they may yet improve. The competition for the hive prizes lay between Mr. Griffin, Messrs. Abbott, of the School of Apiculture, Southall, and Messrs. Neighbour, of London. A varied assortment of the newest make was exhibited, the numerous mechanical improvements of which elicited the admiration of many competent judges. The palm for the most perfect bar-frame hive was awarded to Mr. W. N. Griffin for his 'Improved Griffin Hive' (manufactured for him by J. H. Cox, of Dawlish). It is ingeniously devised and admirably made, combining with most of the improvements to be found in other makers' hives, several which are the result of Mr. Griffin's own experience and inventive skill. He has introduced a very effective plan of contracting the brood nest, and making the hive dry and warm in winter; and there are various appliances which give the bee-master great facilities for manipulating. Messrs. Abbott, with a hive which a few weeks ago took first prize at South Kensington, had now to be content with second honours; and the third place was awarded to Messrs. Neighbour and Sons for their Kilburn collateral frame hive. Straw hives have not yet, however, been entirely beaten from the field, and several good specimens of these picturesque structures were entered. As usual, the observatory hives were the centre of attraction; and interested groups watched the movements of the busy inmates with much curiosity and delight, some, while looking on, perhaps recalling Bowring's admirably descriptive lines:—

> Stores of rich fragrance? Orchestras of song!
> What marvellous seats of hidden alchemy;
> How oft, when wandering far and erring long,
> Man might learn truth and virtue from the bee!

At one o'clock the Mayor, who was accompanied by a number of ladies and gentlemen, formally opened the show, remarking, in the course of a brief speech, that this was the first occasion on which the Association had held

an exhibition independently of any other Society. His Worship congratulated those present on the splendid weather with which they were favoured, and the excellence of the exhibition before them. Having been President for three years, he regretted to say that the last two years had been so bad that bee-keepers were much discouraged; in fact, last year there was no honey at all. He had ventured to predict that, after such a bad season, they would again be favoured with a good one, and that prophecy had happily been fulfilled. His Worship expressed a hope that they would be able to reap a good harvest in other directions also. He trusted the exhibition now to be opened would prove so successful that it would induce a large number of people to join the Society, so that in course of time it would become a first-rate Society, doing good to all connected with it, if not rivalling the great British Bee-keepers' Association, over which the Baroness Burdett-Coutts presided. His Worship concluded by returning, on behalf of the Association, thanks to Mr. Griffin, the Hon. Secretary, for the admirable manner in which he had worked, and to the Rev. J. G. Dangar for his kindness in placing the College grounds at their disposal. The exhibition was then declared formally opened.

For observatory hives there were six entries, including hives from each of the three leading makers in England, viz., Messrs. Abbott Bros., of Fairlawn, Southall, Middlesex; Mr. S. Baldwin (British Bee-keepers' Association's expert), of Gipsy Cottage, Upper Norwood and the Alexandra Palace; and Messrs. Neighbour and Sons, High Holborn, London. The conditions of exhibition required that the hives should be stocked with combs, bees, and their queen, in proper working order, the combs to be visible on both sides. The first prize was awarded to Messrs. Abbott, for a hive stocked with Cyprian bees, of which they are at present the only importers. Their hive is constructed on an entirely new design, being of oblong shape, and as deep from front to back as it is high—enabling the bees to be kept in their natural condition. It is really a bar-frame hive with glass top and sides, but fitted with a clever contrivance, by which any of the frames it may be desirable to examine can be brought to the front and turned round, so as to expose either side to view. This arrangement is so obviously superior to the old one, in which the bees are constantly exposed under a large surface of glass, and have to work in an unnatural and uncomfortable condition, that Messrs. Abbott have beaten all competitors wherever it has been shown hitherto. Mr. W. N. Griffin was the winner of the second prize, with a very complete and well-built hive, suitable for standing in a garden, the sides of which are protected when necessary by baize curtains and Venetian doors. The hive is well ventilated. Accompanying it is a case for packing the frames and bees in when it is desired to remove the hive a long distance. Messrs. Neighbour and Sons obtained the third prize with a hive (stocked with Hungarian bees) mounted on a pivot, so as to be easily turned about. Mr. S. Baldwin showed a six-framed hive of Ligurian bees. The other competitors were J. R. Mitchell, of St. Thomas, and Rev. W. W. Pennell, of Bridgwater.

In another room, nearly adjoining, was exhibited a valuable loan collection. One of the most interesting items here was a set of three cases contributed by Mr. D'Urban, curator of the Albert Memorial Museum, and containing well-mounted specimens and drawings illustrative of the economy of the bee-hive, the enemies of the bee, and the artificial aids used in bee-culture. The specimens included bees of various kinds, queens, workers, and drones; comb in different stages of formation, from the purest white to the worn and discoloured products of the now almost obsolete straw skeps; cells of the three orders of bees, and comb containing honey. The drawings, by Miss E. G. Ormerod, were beautiful and life-like illustrations of such enemies of the 'busy bee' as the titmouse, toad, spotted fly-catcher, death's-head moth, hornet, wasp, &c. Less complete museums of the same kind were contributed by Mr. Griffin and Mr. C. Tite, of Yeovil; and the secretary also lent a photograph of the leading bee-keepers of Europe and America, diagrams illustrating the anatomy of the bee, engravings illustrating bee-keeping in olden times, and a copy of Clerici's anatomical plates. Diagrams were lent by Messrs. Abbott Brothers, the Dorset Bee-keepers' Association, and the British Association. In the same room much attention was paid to one of Abbott's bar-framed hives, fitted with artificial comb foundations, which are found to save a great deal of time and trouble, inasmuch as the bees work all the quicker and better for the start given them. Specimens of the centrifugal honey extractors, including one invented by Mr. Griffin, were also exhibited here. Miss Symons, of Hatt, Cornwall, showed three cases of dried bee flowers.

Amidst the attractions of the afternoon were the practical manipulations by Mr. Baldwin, a London expert, who handled thousands of bees as though they were harmless flies, and such a thing as a sting did not exist. Without protecting himself in any way, he turned hives upside down, drove the inmates into empty tenements, cut out their combs, fixed them in the frames of their new domiciles; and otherwise displayed a marvellous mastery over countless swarms of busy, but withal obedient, little bees. The spectators were also interested and instructed by short lectures, delivered by members of the Association, on the life and history of the wonderful little creatures before them. It should be stated that Messrs. Lucombe, Pince, & Co. lent a large number of fine and valuable plants for the decoration of the various show-rooms, and that the entire proceedings were enlivened by an excellent programme of music rendered by Signor P. Ulrico's Royal Italian Band. At six o'clock the prizes were distributed to the successful competitors by the Mayoress, according to the subjoined prize list, the adjudications having been made by the following gentlemen, who kindly consented to act as judges:—Honey and wax (Classes 1 to 9)—Rev. Dr. R. Dennett, Admiral R. Moorman, and Rev. P. Williams. Bees (Class 10)—Mr. S. Baldwin. Hives and other exhibits (Classes 11 to 21)—Rev. J. Bartlett, Rev. J. A. Kempe, and C. Tite, Esq.

PRIZE LIST.

HONEY.—Class 1—For the largest and best harvest of comb honey from one stock, obtained under any system, or combination of systems, the same to be declared on exhibition: 1st, G. M. Walsh, 1*l.*; 2nd, ditto, 15*s.*; highly commended, W. Church. Class 2—For the best super of comb honey (the super to be of wood, straw, glass, or any combination of the three materials): 1st, G. M. Walsh, 1*l.*; 2nd, ditto, 15*s.* Class 3—Mayor's Prize, to be competed for by members residing within ten miles of Exeter, for the best exhibition of comb honey in sections (the total weight of each entry not to be less than 15 lbs.) Prize, an elegant claret jug—W. N. Griffin; highly commended, G. M. Walsh. Class 4—Sheriff's Prize, an elegant claret jug, for the best eight sections of comb honey (each section separable)—W. N. Griffin. Class 5—For best exhibition of run or extracted honey (in glass jars, not to exceed 2 lbs. each): 1st, G. M. Walsh, a 5*s.* book on bees; 2nd, Rev. J. A. Kempe, 2*s.* 6*d.*; 3rd, C. J. R. Mitchell: highly commended, G. M. Walsh. Class 7—Open only to *bonâ fide* cottagers, for the largest and best exhibition of comb honey, from one stock, without destroying the bees: 1st, W. Pickings, bar-frame hive (presented by Mr. R. Steele, of Fowlis-by-Dundee); 2nd, T. Taylor, Carr Stewarton super (presented by Mr. W. N. Griffin). Class 8—For the best super of comb honey: 1st, W. Pickings, a bar-frame hive (presented by Messrs. G. Neighbour & Sons); highly commended, J. Boulter. Class 9—For the best six sections of virgin comb honey:

1st, W. Pickings, a bound volume of the *British Bee Journal* (presented by C. N. Abbott, Esq.)

Bees' Wax.—Class 6—For the best sample of bees' wax, from exhibitor's own bees: 1st, G. M. Walsh, a pair of Lee's Crystal Palace supers.

Bees.—Class 10—A prize of a moveable comb hive, value 12*s.* 6*d.* was awarded to R. Richards for the strongest and best straw skep of bees, not being a swarm of the present year.

Hives.—Class 11—For the best observatory hive stocked with combs, bees, and their queen, in proper working order, all combs to be visible on both sides: 1st, Abbott Bros., 2*l.* and first-class certificate; 2nd, W. N. Griffin, 1*l.* and second-class certificate; 3rd, Neighbour & Sons, 10*s.* and certificate. Class 12—For the most perfect bar-frame hive, with covering and stand: 1st, W. N. Griffin, 1*l.* 10*s.* and first-class certificate; 2nd, Abbott Bros., 1*l.* and second-class certificate; 3rd, Neighbour & Sons, 10*s.* and certificate. Class 13—For the best and most complete wood or straw hive on the moveable-comb principle, suitable for cottagers: 1st, Abbott Bros., 10*s.* and certificate; 2nd, Neighbour & Sons, 5*s.* and certificate. Class 14—For the best straw hive for depriving purposes: 1st, Neighbour & Sons, 5*s.* and first-class certificate; 2nd, J. Wilcox, 2*s.* 6*d.* and second-class certificate.

Comb Foundation.—Class 15—For the best sample of comb foundation (worker cells), made of fine bees' wax, not less than 5 lbs. in weight: 1st, Abbott Bros., 10*s.*; 2nd, ditto, 5*s.*

Honey Extractor.—Class 17—For the best honey extractor: 1st, W. Hollands, 1*l.* and first-class certificate; 2nd, Abbott Bros., 10*s.* and second-class certificate.

Super.—Class 18—For the cheapest and best super for general use in an apiary: 1st, Abbott Bros., 5*s.* and certificate.

Bee Flora.—Class 19—For the best and largest display of British bee flora in a dried state or otherwise: 1st, Miss Symons, 5*s.*

Miscellaneous.—Class 16—For the best and largest collection of hives, bee furniture, and apiculturists' necessaries: 1st, Neighbour & Sons, 1*l.* 10*s.* and first-class certificate; 2nd, Abbott Bros., 1*l.* and second-class certificate; 3rd, S. Baldwin, 10*s.* and certificate. Class 20—For any useful apparatus connected with bee management, calculated to be of real use in an apiary. The prize was awarded to Admiral R. Moorman. Class 21—For the exhibition of hives and apiarian appliances at present used in other countries, as well as any utensils obsolete or curious, which are likely to prove attractive and interesting to bee-keepers. This was a loan exhibition. No awards.

Extra Prizes.—The Silver Medal of the British Bee-Keepers' Association, to be awarded to the best exhibit in the show of supers or sections of supers of comb honey, produced in the most saleable form—W. N. Griffin. The certificate of the same Society to the second best exhibit—W. N. Griffin. The Bronze Medal of the British Bee-keepers' Association to be awarded to the best exhibit of run honey produced in the most saleable form.—G. M. Walsh.

After the distribution of prizes, the Rev. J. G. Dangar proposed a vote of thinks to the Mayor and Mayoress for their kind patronage, which was seconded by the High Sheriff of Exeter.

SURREY BEE-KEEPERS' ASSOCIATION.

The above Association have held two local Exhibitions this month, whereat, for the first time, they erected their new Bee-Manipulating Tent—an admirable construction, capable of holding some sixty to seventy people; well adapted for local shows and other gatherings where bee promoters encourage bee demonstrations for the benefit of the cottager. It has been constructed under the able supervision of Capt. Campbell, H.M.I.N., whose name is a sufficient guarantee in his locality of its being well done.

The first of the above exhibitions was in connexion with a large Floral and Vegetable Show held in the grounds of the Sandhurst College Governor, on the 10th and 11th inst., being tolerably well attended.

The second was in connexion with the Guildford Agricultural Association, in the grounds of H. Parson, Esq., at Guildford, on the 14th inst. The weather was totally opposed to the display made, determinately prohibiting bee manipulations by a continuous downpour of water—a mimic repetition of Kilburn, but without wind.

Mr. J. A. Abbott, who was engaged professionally, was, however, not to be caught napping even by a thorough wet day, and managed to get a demonstration in the course of the afternoon of driving, slinging, &c., interspersed with practical information, which was much appreciated by the audience.

There was a good exhibition of hives, bee-gear, and honey, the latter supplied by Capt. Campbell, H. Parson, Esq., J. W. Pewtress, Esq., and F. H. Lemare of Guildford; also by Mr. Scott of Hindley Heath, Godstone, Mr. Craig of Camberley, Mr. Hollands of Croydon, and Mr. Foot of Horsham; the latter, as a Cottager, showed 4 lbs. of extracted honey.

Owing to the incessant rain, the attendance was very meagre, almost confined to gentlemen whose business at the Cattle Show led them on to the ground.

WEST KENT BEE-KEEPERS' ASSOCIATION.

The second annual Exhibition of this Association was held in conjunction with a floral exhibition on August 5th, in the grounds of W. May, Esq., Northfield, St. Mary Cray, and resulted in an unqualified success, the fineness and warmth of the day contributing much to the enjoyment of all present.

The committee, with a full appreciation of the necessity of properly supporting the dignity of a County Association (assumed since last year), determined to offer a liberal schedule of prizes, the British Bee-keepers' Association also contributing thereto with their silver and bronze medals and certificate of merit: in consequence most of the prizes were closely competed for, and Messrs. F. Cheshire and J. M. Hooker, who kindly officiated as judges, had very considerable difficulty in determining the relative merits of the several exhibits, this occurring particularly in the classes 7 and 8, viz. 'for the best exhibition of honey in supers, or sections of supers,' &c.; and 'for the best exhibition of extracted or run honey.'

The awards given as follows appeared to give entire satisfaction, viz.:—

Bees.—Class 1.—For the best stock or specimen of Ligurian bees, to be exhibited with the queen in an observatory hive: 1, Mr. S. J. Baldwin: 2, ditto. Class 2.—For the best stock or specimen of English bees, to be exhibited as above: 1, Mr. R. Scott; 2, Mr. S. J. Baldwin.

Bees' Wax.—Class 10.—For the finest sample of pure bees' wax, not less than 3 lbs. in weight: 1, Mr. S. J. Baldwin; 2, Mr. J. Styles.

Honey.—Class 3.—For the largest and best harvest of honey, in the comb, from one stock of bees, under any system or combinations of systems: Mr. P. Skinner. Class 4.—For the largest and best super of honey, the super to be of wood, straw, or of wood in combination with glass or straw: 1, Mr. G. Allen: 4, Mr. A. Walker. Class 5.—For the largest and best glass super: 1, Mr. R. Scott; 2, Mr. J. Soloman; 3, Mr. P. Skinner. Class 6.—For the best glass super, under 5 lbs. nett weight: 1, Mr. R. Scott; 2, Mr. W. Waterman. Class 7.—For the best exhibition of honey in supers or sections of supers, separable, in the most attractive form, and each not more than 3 lbs. in weight, the total weight of each

entry to be not less than 12 lbs. nett weight: 1, Mr. G. Allen: 2, Mr. P. Skinner; 3, Mr. R. Scott. Class 8.—For the best exhibition of extracted or run honey, in glass or other jars: 1, Mr. R. Scott; 2, Mr. P. Skinner; 3, Mr. G. Allen. Class 9 (open class).—For the largest and best exhibition of super honey in comb, the property of one exhibitor, and gathered by his own bees: 1, Mr. J. Garratt. Class 11.—For the best specimen of run honey, in most marketable form, not exceeding 2 lbs. in weight, the selling price to be quoted: Equal 1 and 2, Mr. J. Garratt and Mr. S. J. Baldwin; 3, Mr. R. Scott.

Driving Competition.—Class 12.—For the competitor who shall in the neatest, quickest, and most complete manner, drive out the bees from a straw skep, and capture and exhibit the queen: 1, Mr. S. J. Baldwin. In consequence of the three other competitors not having discovered the respective queens within the prescribed time—15 minutes—no other prizes were awarded.

Class 13.—To the cottager who shall produce the best stock of bees in a straw skep, to be available for the manipulations: Mr. J. Tough.

The general character of the Show marked a most satisfactory advance and improvement over that of last year, whilst some of the specimens would in all probability take higher rank in any exhibition. One pleasing result of the establishment of the Association was seen in the calmness and comparative indifference of visitors to the large number of bees that were flying about, and were attracted to the honey tent, evidencing the spread of knowledge of the habits and instincts of bees.

It may be remarked that the Bee Tent, which is usually so attractive a feature, did not draw the number of visitors as on some previous occasions; but this may be partly accounted for by the fact that its mysteries had been penetrated at last year's exhibition, and it had recently performed under the auspices of the Association a tour of neighbouring Flower Shows, viz. Farningham, Chislehurst, and Bexley Heath.

STIRLING APIARIAN ASSOCIATION.

Communicated.

The Annual Exhibition of bees, honey, hives, &c., took place on Saturday, 4th September, at the Corn Exchange, in conjunction with the Flower Show. The exhibition opened under most favourable weather, the day being very warm, and proving most favourable to both visitors and bees. The entries were very numerous, and far exceeded former shows both as to quality and quantity. The great centre of interest was, as usual, the observatory hives exhibited by Messrs. Johnstone and Peacock. The former exhibited a six-bar Woodbury Hive. In it the frames were arranged in two perpendicular rows, showing artificial comb-foundation in the various stages of extension up to the complete cell. It was stocked with beautiful black bees; and many of the visitors were delighted at seeing 'such a big swarm.' The latter exhibited a leaf hive, which was also much admired for its beauty and ingenuity. It was well stocked with fine Ligurian bees. The large number of visitors who attended paid particular attention to these two exhibits. Mr. Johnstone also exhibited one of the celebrated Lanarkshire bar-frame hives, which was also a source of attraction to many apiarians who had not yet introduced them into their apiaries. Several other articles were exhibited which were very interesting. The entries in the honey classes were numerous, and the exhibits of excellent quality; and it must have cost the Judges a great deal of trouble indeed in adjudicating their awards. The success with which they accomplished their task drew forth the warmest approbation. The Judges were two of our old most prominent bee-keepers in Scotland, Messrs. William Thomson, Auchenraith, High Blantyre; and William Sword, Bonny View, Falkirk.

The following are the awards in the various classes:—

Class 1—For the best display of honey-comb in supers, the property of the exhibitor, and all this season, 1st, 15*s.*; 2nd, 7*s.* 6*d.*: 1st, James Johnstone, Touch, *via* Stirling; 2nd, Andrew Law of Garganneck, *via* Stirling. Class 2 and 3—For the best single super, or cap of comb-honey in straw, 10*s.*; 7*s.* 6*d.*: 1st, James Johnstone; 2nd, James Johnstone. Class 4—For the best single super in glass or wood, 10*s.*; 7*s.* 6*d.*: 1st, John Brisbane, Old Polmaise; 2nd, James Johnstone. Class 5—For the best single super in glass or wood, above 10 lbs. gross weight, 10*s.*; 7*s.* 6*d.*: 1st, James Johnstone, 2nd, James Barclay, St. Ninians, and David Galashen, Stirling, equal. Class 6—For the best sectional super, over 10 lbs., combs separable, and not over 3 lbs. each nett, 10*s.*; 7*s.* 6*d.*: 1st, Mr. Maine Doune; 2nd, James Johnstone and Andrew Law, equal. Class 7—For the best sample of run or extracted clover honey, to be exhibited in glasses, 7*s.*; 5*s.*: no entries. Class 8—For the best sample of heather honey, 7*s.*; 5*s.*: 1st, James Johnstone; 2nd, John Beaton, Touch, *via* Stirling. Class 9—For the best samples of wax, not less than 2 lbs., 5*s.*; 2*s.*: 1st, Andrew Law; 2nd, James Johnstone. Class 10—For the best observatory or unicomb hive, stocked with bees and their queen, 20*s.*; 10*s.*; 1st, James Johnstone; 2nd, Thomas Peacock, Stirling. Class 11—For the best bar-frame hive, complete, price not to exceed 20*s.*, 10*s.*: 5*s.*: 1st, James Johnstone. Class 12—For the best cottager's bar-frame hive made in this district, 10*s.*; 5*s.*: 1st, John Gowans, Stirling.

The Committee may congratulate themselves on the success of their Annual Show; but honour should be given to whom honour is due, and those most deserving it are Mr. Peacock, Stirling, and Mr. Johnstone, Touch. These two gentlemen did their utmost to make it successful by bringing forward exhibits and by rendering their services during the entire day. It is to be hoped that at the next show the Committee will make better arrangements for the removal of exhibits so that they may not be again destroyed.

SUFFOLK BEE-KEEPERS' ASSOCIATION.

The first show of this newly formed Association was held at the Fine Art Gallery, Ipswich, on Tuesday the 7th September. Though the Society has only been established a few months, it has already done a good work by illustrating at various centres of the county the best and the most humane, as well as the most profitable, means of treating bees. The exhibits at Ipswich were arranged on eight tables, and were divided into eleven classes. The exhibition was well attended. In the course of the afternoon Dr. Taylor delivered a most interesting lecture on 'Bees, their Influence upon Apiculture and Horticulture.'

Bee-Keeping in 1832.—'The Rev. Mr. Dunbar, by a series of experiments in Scotland, ascertained, that when a queen-bee is wanting for a hive, her majesty can be, and is, produced from the egg of a working-bee. In one experiment, having removed the queen, the bees set about constructing royal cells and placing common larvæ in them. In seven days two queens were formed. One of these killed the other, and though, while in a virgin state, treated with no distinction whatever, she no sooner began to lay, than she became the object of constant solicitude and respect to crowds of her admiring subjects, who watched, fed, and waited upon her.'—*Chambers' Edinburgh Journal*, No. 35, p. 272, *Sat., Sept.* 22, 1832.

Correspondence.

*** *These columns are open to Subscribers, so that their queries, replies, correspondence, and experiences, may be* fully *and* faithfully *recorded; and for the discussion of all theories and systems in Bee-culture, and of the relative merits of all hives and appurtenances, that the truth regarding them may be ascertained. The Editor, therefore, must not be expected to coincide with all the views expressed by the various writers. All Correspondence is addressed to the Editor.*

TRANSFERRING AND DRIVING.

The following may interest some of your readers; and I should like to have your comments upon it:—Last week I resolved to unite four straw hives, and transfer to one of your frame hives. It took me nearly three hours to get the bees out of the several hives. To my astonishment one hive had no less than fifty drones in it; and another one was raising a young queen—in fact the cap of her cell was partly eaten round, and she was ready to come out. I sprayed the whole of the bees with scented syrup; but had to rescue three queens, as they were each incased. I put them under separate glasses, and then tumbled out the bees from the straw hive into which I had driven them, on to a cloth, and placed the bar-frame hive over them; in two minutes every bee left the hive and clustered all round outside the body-box. I then took a queen and placed her inside upon one of the combs, first spraying her, and put a handful of bees in with her. In a second they had her down on the cloth, and so she had to be rescued. She flew out of my hand, I got one of the other queens and did the same, but the same thing occurred, I tried the third queen, and so managed the bees as to get nearly half of them into the hive. In three minutes they had the queen rolled out at the entrance; and, of course, she had to be rescued like the rest.

Well, I scarcely knew what to do. I had tried all three queens and failed. I thought that when bees were gorged with honey they would accept any queen. [A great mistake.—Ed.] I then thought of the queen-cell; so I cut it out of the comb and fixed it into the comb-foundation, and also put back the third queen, and then poured in some of the bees. In a moment they began to set up a hum, and away streamed the bees into the hive; and soon all were housed. The next evening I opened the hive to see how things were going on. I found that the young queen had left her cell; but also found, on another frame, a cluster of bees encasing a queen. By the time I rescued her she was dead. Whether it was the *third* queen or the young one, I can't say; but, at all events, I did not see a second queen in the hive—and there the drones are still, flying in and out of the hive. True, some of them have been killed; but nothing like all. I suppose I shall be able to tell, in a week's time, whether there is a queen in the hive, from the fact if there is a queen there will be brood? If not; what would you advise? Certainly this seems a decided case in which bees refuse a queen. Do you think it is possible that it may be the bees who have had no queen all the summer, that have made such a determined set against the poor mother-bee?—*The Vicarage, Eyrecourt.*

[If the bees had been sprinkled and married in the usual way, they would have settled their own affairs to their own satisfaction in a very short time; and the result would have been pretty much as it turned out, notwithstanding the great anxiety and labour bestowed. Had the queens been considered worth preserving, the proper course would have been to remove them before uniting the bees, and then to have caged one in the midst of the latter in the usual way. Had they been indiscriminately mixed up in the first instance, there would have been the usual slaughter of queens, but *one* would have been acknowledged ruler; such at least is the rule, and except that the queenless lot might have preferred the occupant of their royal cell to a more matronly sovereign, it would probably have obtained in this instance. That the bees on being tumbled out of the skep preferred the outside of the hive to the inside, was incidental; they had been sprayed and were gorged, and the bleeding combs within had no special attractions just then. There is every probability that the encasing bees were those that had been queenless as is suggested. If the newly-hatched queen be the survivor, it is not certain that even eggs will be laid within the period named, and brood will assuredly not be there. If the mature queen survive, she will doubtless begin to lay at once, under the stimulus of excitement, and in the prescribed week eggs and larvæ will be abundant.—Ed.]

VENTILATION.

On page 79, in reply to Query No. 347, I am asked to give my experience in my new locality with regard to lowering the floor-boards of hives during winter for ventilation. When I adopted this plan my hives were (as you correctly state) kept in lofts over my stables, and although facing the south they were further protected from the prevailing south-westerly winds by lofty trees. The hives kept in the garden on the ground were also protected in the same way, and I therefore adopted the same plan for ventilating these, viz. lowering the floor-boards one-eighth of an inch all round, and raising the crown-boards one-eighth of an inch at the back. In the loft there was never any danger of any undue influx of cold air; and out-of-doors the outer coverings of the hives were sufficient protection, and the bees, also, were never exposed to the direct influence of the wind and weather.

In my present locality where I have not these natural advantages, and am situated on very high ground, directly exposed to the full force of the prevailing south-westerly winds, it is self-evident that a different system of ventilation would have to be adopted. Last winter I had four hives of bees in a bee-house, and two of them were raised off the floor-board one-eighth of an inch and the space all round the hives, about 8 inches deep, was filled up with oat-chaff. The opening for ventilation was, therefore, protected by means of the chaff, and also the outer case of the bee-house. The only ventilation I had on the top was one of my now disused 4-inch supers filled with chaff, and unbleached calico tacked on at top and bottom.

You see this is a modification of the same plan to suit the altered circumstances; and I am pleased to say that both these hives came out well in the spring. I should certainly never think of lowering

the floor-boards and exposing the bees to all the changes of weather of an English winter without some protection. Half the hives lost in this country die during the winter and spring, and want of ventilation is perhaps the chief cause of this great loss. I have tried a great many different ways of ventilating hives during winter, and I do not think it very much signifies how it is done, provided it is done without reducing the temperature of the cluster suddenly, or causing a draught. In addition to this, as winter is approaching, let me urge upon bee-keepers in general to have their hives filled with large populations of young bees, by slow and continuous feeding now, and for a short time longer, say to the middle or end of October, according to the weather, and then crowding the bees into as small a space as possible by means of division-boards. I attribute my success in wintering to having hives well ventilated without draughts, plenty of stores, plenty of young bees, and a very small space for them to keep warm; and if others attended to these main points, and carried them out, we should not hear of so many losses every year.—Thos. Wm. Cowan, *Comptons Lea, Horsham, Sept.* 23, 1880.

HYMETTAN HONEY.

An old friend, Lieut. M——, R.N., who is now my guest, informs me that when he was at Athens last summer with the British fleet, they endeavoured to obtain from the ship's agent a supply of the far-famed honey, from the mountain of Hymettus. The ingenuous Greek informed them that he 'unfortunately had none in stock just then, but he had ordered a fresh supply from England!' Whether after this *naïve* confession — and remember the mountain itself is only about ten or twelve miles from Athens—it is worth while giving 5*s.* per lb. for Hymettan honey, when it cannot be procured on the spot, I must leave to the judgment of those who pay such sums. And what renders the story more *piquant* is the fact, that my friend and his brother officers were very anxious to obtain this far-famed honey, in order to send it home to England for the delectation of their sisters, sweethearts, wives, and friends; and, doubtless, their wish would have been gratified had the supply *from London* arrived. The only Hymettan honey my friend ever saw or tasted in Greece was contained in tins labelled, in excellent English, 'Fine Hymettan Honey.' Possibly it is not the wild thyme, of which there remains but little on the mountain, but the iodine imparted during its journeys *trans mare* that gives the Hymettan honey its peculiar and delicate flavour.—H. J. W., *Frithsden.*

NEW FACTS!

BEE POISON—BEE FOOD—BORAGE—RADIUS OF FLIGHT—BEE LIFE.

I wish to let all our bee-friends know what I have found out—and now have proved again and again,—that the bee-sting is an alkali, and acid cures it at once. I have also been very closely finding out what food the bees most like; and am astonished to find they worked very little upon the lime-trees, though in splendid blossom. I have found nothing they are so fond of as borage; and I have also found that stalks of borage cut up and mixed with chaff are eaten most greedily by all horses: so after the bees have done with it, and the seed is saved, there is most valuable food—far superior to comfrey—for the cattle. I have saved a great quantity of seed, which I highly recommend to all bee-farmers. I shall grow some acres next year, having near sixty hives—which is quite as much as any district can keep, for I am quite sure bees do not go so far as people state; and if they do the loss in storms and fatigue is very great. They like feeding near home; and I am equally certain bees live longer than people admit.—T. Beale Browne, *Salperton Park, Cheltenham.*

[Please read notice at head of 'Correspondence.'—Ed.]

BEE-KEEPING IN AUSTRALIA.

Notwithstanding the advantages which the climate of this sunny land offers to bee-keepers, there are but few who have emerged from the obscurity of the old box system; and a person seeking to introduce the improvements which have of late years found favour in England, America, and the Continent, has to seek his information from afar, and has to entrust the manufacture of his apparatus to workmen ignorant of the objects to which it is to be applied. The climate allows bees to gather honey and pollen all the year round; in a more diminished quantity, it is true, in winter than in summer. My bees are to-day making a bed of mignonette alive with their hum, and we are now in the midst of our winter. Bees are kept by almost every farmer, as, under the prevalent system, they require neither attention nor expense, and any income derived from the sale of honey and wax is pure profit. On the other hand, if the bees—owing to damp, moths, or other cause—forsake their boxes no loss is entailed. You will, therefore, understand that any one seeking for a more intelligent order of bee-government stands alone in the field, and has much to contend against.

Please state in coming current number of the *British Bee Journal*, (1.) Instructions for procuring Ligurian queens and bees in Sydney, say, from San Francisco. The voyage, per mail steamers, takes twenty-eight days. (2.) If the back numbers of the *Bee Journal* are in print?

If notes, from time to time, as to the doings in bee-culture in these parts would be of interest to the Editor of the *Bee Journal*, I should be glad to supply them. The Editor must, however, bear in mind that in the branch of industry indicated, we are in a very primitive state.—S. MacDonnell, 312 *George St., Sydney, Australia, Aug.* 2, 1880.

[Query No. 1 can be better replied to by American bee-keepers than by us; and having given the full address of our correspondent, we leave the matter in their hands, trusting that someone who deals in what is required will communicate with him. The back volumes of the *Bee Journal* can still be had, but Vols. I., II., and VI. are exceedingly scarce. We shall be glad at all times to report the progress of Australian bee-keeping. —Ed.]

BEES AT SEVENOAKS, KENT.

I am very pleased to say we have been taking some very fine supers off this season, under the instructions of the *British Bee Journal*. I took a splendid one off on the 7th of July weighing 20 lbs., on the sectional principle; and have taken one for a cottager that weighs 22 lbs., but that is in a glass super. I think, taking this season as a whole, it has been a very good one. I drove three straw skeps for a cottager the other day, very well indeed, and put them back again; but he has just come and told me that two of the hives are empty. Can you give me your idea as to the cause of their leaving? I must tell you there are three straw skeps just close to those that I took, and he has an idea that they are gone into them. He put the feeding-bottle on the same night, and they were all right two days after when I went to see about them. As I get the bees generally for taking, or make a charge for my labour, I should very much like to see some practical hand unite them successfully, as I am not up to it yet.—G. Sands, *Sevenoaks, Kent.*

P.S.—Is there any market for bees that are driven out, amongst your professional friends?—G.S.

[There is little doubt but that the bees absconded from the empty hives in which they had been placed, and joined those that were so temptingly near them. Bring us over a few stocks of driven bees, and we will show you how to unite them, and will give you a shilling a pound for the bees into the bargain.—Ed.]

A HONEY MARKET IN IRELAND.

A firm in Capel Street, Dublin, require three tons of maiden honey (1880). Can any of your producers give a quotation? They are a respectable firm, but I am unable to touch it.—J. Traynor, *Tinahely.*

[Three tons of honey at 1*s.* per lb. would realise 336*l.* sterling. A comfortable little sum, the possession of which, as a bonus, would make the heart of many an Irish farmer to rejoice. Nevertheless, there is scarcely a meadow-farm, or tract, of fifty acres, in the south, east, or north of Ireland, in which that amount might not have been realised, during our month's tour there, had there been bees to collect the wasting nectar, it was

Honey, honey everywhere,
And not a bee to sip. Ed.]

PROLIFIC BEES.

I notice that some remarks have been made from time to time in your valuable *Journal* on prolific hives; perhaps the following may interest some of your readers, and encourage intending amateur bee-keepers about to commence this fascinating and profitable pursuit.

Last February I sold to a friend of mine for 2*l.* 2*s.* one of your Standard Hives, containing a young Ligurian queen which had mated with an English drone. I had taken great care in feeding all my bees during the previous unfavourable summer and autumn, and it well repaid me.

The above-mentioned hive threw an unusually large swarm on the 20th of last May, a cast on the 30th May, and a colt on the 4th June (almost as large a swarm as the first one.) The swarm of 20th of May threw off a maiden swarm on the 26th of June, and a maiden cast on the 4th July; so my friend had no less than five swarms from the original hive I sold him; and in addition I should mention, the parent hive filled a super containing 20 lbs. of honey, and the swarm of 20th May also gave him some dozen pounds of super honey.

All the hives are doing well, and he has had a return of something like three hundred per cent for his money. This is only one instance of what may be done if the good advice laid down by you on modern bee-keeping is only followed.—H. R. Vincent, *Elmersend, Kent, Sept.* 8.

SOMERTON SHOW.

As you were here at our last year's flower-show you may perhaps be interested in our doings this year. As usual, an assortment of hives and money were offered as prizes for supers of honey, but produced no competition. Three bee-keepers, however, sent small quantities of extracted and comb honey, all of which were quickly disposed of at 1*s.* 3*d.* per lb. for the former. The morning of the show a country cottager brought in a super off one of Neighbour's No. 4 skep-hives, 8½ lbs., which sold immediately at 15*s.* the lot, but to take this he had actually sacrificed the bees in the stock hive. I hear on all hands of this wanton destruction of bee-life just to obtain possession of a few pounds of a thick, sticky compound called honey, and sold at 10*d.* per lb. Can one understand such slaughter of the innocents, and by those who have seen and assisted at your displays? I know of one of your former helpers who declares and spreads the notion that you mix 'a something' with your touchwood for your smoker used in quieting. Wasp-nests at our show were a grand line. 348 of these pests of bee-keepers and gardeners were brought in, and brought to their captors the sum of 6*d.* each.—T. C. Head, *Somerton, Somerset.*

[The former 'helper' who spreads such false notions has evidently propensity for lying 'mixed' with his perverse obstinacy and ignorance. Helper, indeed!—Ed.]

WASP STINGS.

The inclosed cuttings from a newspaper will, I hope, be of service if inserted in the *B. B. J.*

Is the effect of a bee-sting known to be as rapid and virulent as that of the wasp?

In case a person were stung in the upper part of the larynx, or back of the mouth—as in the case of the poor man at Goldberg—could you suggest any probable means of relief, or by which air could be supplied? A surgeon would, perhaps, perform the operation called tracheotomy; but then a surgeon is not always on the spot. Is there any drug known which would reduce the swelling immediately, even at the risk of injuring the membrane temporarily?

Perhaps some of your medical readers could give a hint or suggestion, as valuable lives might thus be saved.—J. Urell, *Gt. Maplestead, Halstead.*

'Death from the Sting of a Wasp.—Amongst the smaller miseries of summer, even in our temper-

ate latitudes, are the formidable aspect and offensive demeanour of certain insects, provided by nature with threatening voices and venomous weapons, which put in an appearance as soon as the hot weather begins, chilling the boldest heart with panic, and carrying with them discomfiture to mankind whithersoever they fly. Not the least aggressive of these winged warriors is the wasp, whose poisonous sting inflicts injuries that, under exceptional circumstances, have been known to prove fatal to human life. A distressing case of this kind occurred last week at Goldberg, upon the estate of a wealthy German landowner, one of whose farm-servants, whilst harvesting in the fields, sate down to eat his midday meal—consisting of bread, cheese, and milk—which had been sent out to him from his master's kitchen. With his first sup of milk, he took a wasp into his mouth; and, although he promptly spat it out, the angry creature found time to plant its sting in the back of his throat before he could get rid of it. The interior of the unfortunate man's larynx swelled so rapidly that, ten minutes later, he died of suffocation, after enduring terrible agonies in the vain endeavour to breathe and to force open the air-passages of his throat. A surgeon, who had been sent for without loss of time, arrived within a quarter of an hour from the time at which the sting had been inflicted, only to find a corpse surrounded by horror-stricken peasants. The deceased, an old soldier attached to the reserve of the King's Grenadier Regiment, leaves a wife and family to lament his tragical and untimely end. He had braved with impunity the thousand perils of battle in two campaigns to perish miserably at last by the sting of a wasp.'—*Daily Telegraph*.

'Mrs. Prior, wife of a baker, at Coggleshall, Essex, while about her household duties a few days ago, was stung by a wasp in the neck, where she was already suffering from soreness. Distressing symptoms at once showed themselves, and death occurred in a few minutes from shock to the system. It is believed that Mrs. Prior was a sufferer from heart disease.'

[Every one knows how sensitive the back of the throat is, for when even a crumb goes the 'wrong way' the spasm caused is most painful; how much worse, then, must it be when stung, and instant inflammation ensues. We prefer not to advise in such cases, but if we saw any one suffering, we should try and keep open the passage to the lungs at all hazards. A tube of any kind put into the windpipe would prevent immediate death, and though the remedy would be a severe one, it would give a chance to the patient while a surgeon was being fetched. Bee-stings are often worse than those of wasps, as the poison-bag is usually left with the sting in the wound, and its muscular force continues to drive in the poison after the bee has gone. A few simple directions by competent authority what to do when dangerously stung would be a benefit to humanity. Who will kindly give them?—Ed.]

A TRUANT QUEEN'S RETURN.

When I was living at Offley in Hertfordshire last summer, I lost a powerful Ligurian swarm, headed by a Ligurian queen of the previous summer. I heard some time after that the swarm had been seen to settle for some time in a lane nearly two miles from my house, and then again flew off towards a park about two and a half miles from my home. They, doubtless, had sent out pioneers, and fixed on some hollow tree as their future abode. I have now just received a letter from a young man who is living in the house which I formerly occupied, and who keeps bees himself. He tells me that some time ago, this summer, a splendid swarm of Ligurian bees came and settled on a bush in the meadow adjoining my old garden, which he purchased from the man who discovered them. His letter says, 'It was the largest swarm I ever saw, I believe there was nearly half a bushel.' But the size of the swarm does not much interest me. There is no one nearer than three and a half miles who keeps Ligurian bees in the neighbourhood of Offley. Can that swarm have been led back to the old locality by the truant queen? If so, what a wonderful instinct, akin to memory, that queen-bee must have possessed. I should be deeply interested if any readers of your *Journal* can narrate similar instances. Of course, I cannot say that this was the old queen who knew her way home; but circumstances point to that inference, although old queens seldom take such long flights.—P. H. Phillips, 13 *Clifton Road, Winchester, August* 28, 1880.

A CANDIDATE FOR HANWELL.

I have killed the Cyprian queen because, when I looked at my beautiful Italian queen, I could not think of changing the queens, the Cyprian being not so stout as a worker, as you will see in the box I sent you.—R. J. T., 259 *Green Street*.

P. S.—We must all pay for learning.

[Was there ever such an act of madness? After all the trouble, time, and expense of obtaining pure imported Cyprian queens, to deliberately kill one, because, after her long journey and confinement, she was not as large as a full-laying queen of a different race!—Ed.]

THE HARVEST—EXTRACTING HEATHER HONEY—WOOD FOUNDATION.

I want, as usual, to pick your brains a little. I, like your correspondent 'J. C.,' of Newton Kyme, who will know my initials very well, found this last honey season, up to the end of July, almost as bad as last year. In the meantime you were giving us glowing accounts of your honey harvest, which I could hardly have credited if I had not been down to see you last month. I suppose it is simply a question of weather, and also that in the south your bees are ready to swarm a fortnight earlier than in Yorkshire. When I saw you in the very beginning of August, I told you I had to begin to feed. The bees were then pulling out the drone-grubs, and they had nothing in their hives for the winter. Since then, owing to the lovely weather, they have been enabled to get to the moors (a flight of two miles), and have laid in a tremendous stock. A friend of mine, who is four (!) miles from the moors, has had the same result.

Now I am particularly writing to ask you about your wood-foundation. In a very few days after getting to the moors, my bees were hanging out in clusters, idle. I immediately set to work with the extractor, with the result that, owing to the thickness of the honey and its great weight, every comb I tried broke down in the process. I did not mind at all, as far as the combs were concerned, as I had a good stock of clean combs not in use. Do you think, if the wooden foundation had been used, that the thickest honey could have been slung? I have

my doubts about it, as this honey was so thick that it will not strain through ordinary muslin. Would it not be possible to fix your wooden foundation by means of slips of tin and rivets? Having to pull all one's frames to pieces to fix the foundation, is a certain drawback to its use.—A. W.

[Our experience with heather honey is, that it cannot be moved by any extractor after it has been stored for a short time. It sets in a few days, and we have little doubt but that even on wooden foundation it would carry the cells with it rather than leave them. Unless operated on when newly gathered, there is little hope, as we believe, of 'extracting' it.

Fixing the wooden foundation into frames ought to give no anxiety or trouble. It can be trimmed to fit, *i.e.*, *fill*, the frames—it cannot well be broken—and may then be tied in with wire through its edges, or fastened as picture-backs are in picture-frames with brads or small staples. If the grain of the wood (foundation) is made to run up and down in the frames, instead of from side to side, a saw-scarf right through the top and bottom rails of the frames will afford very simple yet efficient methods of fixing. The sides need not in such case be fastened.—Ed.]

BEE-KEEPING IN DORSET.

I was so pleased with what I saw and heard at the Weymouth Show of the Dorset Bee-keepers' Association last month, that I have obtained from the three principal exhibitors a few particulars which will probably be interesting to many of your readers if you can find room to publish them. Mr. W. H. Dunman, jun., of Troytown, near Dorchester, who is hon. sec. of the D. B. K. A., answers my queries thus:—

'I began this season with fifteen stocks of bees, ten of them in framed hives and five in straw skeps. The bees took to supers about the last week in May, but a great number of stocks would insist on swarming. I put back several of them four times, either taking away the queens or cutting out the queen-cells, but they would swarm; and at last I lost one of the best of them by their flying away. Another, after it had swarmed four times, I put into a Cheshire hive, and it was so large that in ten days it filled every frame with comb. Into this hive I have successfully introduced an Italian queen. From the old stock, after they had swarmed, I took off the supers, and they had nearly 30 lbs. of honey in them, in 2-lb. sections. Then I extracted the bars, and they have now sufficient for the winter. The fifteen stocks I began with have now increased to thirty, twenty-two of them in framed hives and eight in skeps; and I have taken 343 lbs. of maiden honey in supers (sectional), and 58 lbs. of extracted honey. I won two prizes at South Kensington (the British Bee-keepers' Association Show), a third, value 12*s.* 6*d.*, and a fifth, 5*s.* At the Dorset Bee-keepers' Association Show at Weymouth, I won the Silver Medal given by the British Association, and three first and four second prizes, value 4*l.* 5*s.* My honey was chiefly gathered from Dutch clover and heather. I have found no difficulty in disposing of it, and have even been obliged to buy run honey to supply customers and friends. The price has been from 1*s.* to 1*s.* 3*d.* Our Association opened a great market for honey by holding the show at Weymouth this year, and I have found that 1 lb. and 2 lbs. sectional supers have a greater sale than the heavier ones; and these I intend to use on a large scale next year.'

Mr. J. Antell, of Puddletown, writes:—'I began bee-keeping a few years ago, and wintered about a dozen stocks last year. They are all in hives of Cheshire type, with a few modifications of my own. We have had a splendid season, and I took as much as 89¼ lbs. of super honey from a single stock, thus beating Mr. Dunman and Mr. Stickland at the Weymouth Show, their greatest weight being 86 lbs. and 69 lbs. respectively. Comb honey sells readily in this district at about 1*s.* 3*d.* per lb. and run honey at 20 per cent less. Our honey-flow usually begins the second week in June, when the thorn blossoms, and this is quickly followed by the white clover. We have a few limes, and any quantity of heather about two miles off, on which the bees began to work the last week in July. Our season is pretty well over by the second week in August. The advantage of the Ligurian bees is manifest when the distant heather begins to bloom. Blood tells, as usual; and they evidently take longer flights. I greatly prefer them from the Swiss side. They are more robust, broader at the shoulder, and a larger and stronger bee altogether. I have had both; but in dull weather the Italians fall about, as though the atmosphere was too thick. We have used them side by side, and have repeatedly marked the difference. I think this is really worth notice.'

Mr. T. Stickland, who also lives at Puddletown, gives the following information:—

'I have kept bees for some years: first in bell-shaped straw skeps, then I had some flat-topped ones which did very well; but they are not to be compared with frame-hives, of which I have tried different kinds—some with long bars, some deep, some large, and some small. Finding the disadvantage of having different sizes, I have discarded all but those of Woodbury size, which I believe to be the best, or as good as any. I kept out nine stocks last winter, which lived through very well; but in the spring I lost two queens, which I think was my fault in not being careful to save young ones; so I raised some more as early as possible, and got the hives all right, and sold them, with three others, as I wanted to get rid of the hives, and had not much room for swarms. It was a good thing I did, as the bees would swarm this year. So I began this season with four hives, very strong, having plenty of bees and food. Having two new hives I wanted to use, I made two swarms about the middle of May, and gave each of them five combs from another hive, thinking I should have no more trouble with them swarming. The one I took the bars from built ten more combs from foundation when I supered it. It did not swarm, but I took sixty-nine pounds of honey in supers, and I think they have enough for the winter. One of the others did not swarm again, but I extracted twice. The other hive swarmed twice more, after beginning in supers, and both swarms swarmed. The other hive began in supers very early, but swarmed, and left them a very large stock, which filled a hive and put about 30 lbs. in supers. So now I have ten hives strong enough to winter, and have taken 260 lbs. of honey—about half in supers, the rest extracted. We make about one shilling per pound of our honey on an average. We are about two miles from the heath, of which I should think there are 1000 acres. It begins flowering about the middle of July, and lasts, perhaps, six weeks or two months. Our early gathering is from white-thorn and white clover. A cottager living near me had two good hives in the spring—one in a flat-top straw, the other in one of Abbott's Standard hives. They began in supers, but left them and swarmed, and each of them swarmed three times in June. One of the first swarms finished a Lee's super that the old hive began, and the other finished some sections.'

These are excellent reports from really practical and progressive bee-keepers, and ought to encourage others. You will be glad to hear that bee-culture is making very rapid strides in Dorset. The County Association has nearly doubled its number of members, and the hon. sec. is flooded with letters asking for information and requests for assistance, which he gives most readily, for he is an enthusiastic apiarian, who does not mind a ride of a dozen miles over the breezy downs to transfer a stock, and thus give a beginner a fair start. Good bee litera-

ture is in great demand, and I think the *Hand-book for Cottagers*, recently issued by the B. B. K. A., cannot fail to produce splendid results. It is just what was wanted. By-the-by, why did you not announce the issue of more of your excellent *Leaflets for Cottagers?* I saw the numbers from six onwards at Exeter, for the first time, and was delighted to obtain them. Every secretary should keep a good supply in stock. They will save him no end of trouble in replying to the host of questions asked by novices, for they are brief, clear, and keep close to the point on the essentials of success in modern bee-culture. Can you tell our Dorset friends of any volunteer lecturers for next winter? Mr. Dunman is anxious to arrange his plan of campaign, and could do with half-a-dozen good lecturers. Who will help him? He is really working hard, and deserves assistance.—C. T.

['Volunteers! eyes front! 'tention! forward! quick march!'—Ed.]

CURIOUS CASE OF PROTEST.

A dispute has occurred about one of the supers which was exhibited at a Scotch show a short time since, and the award was protested against on the ground that the honey had not been gathered by the exhibitor's own bees, as per schedule requisition. The matter stands thus:—

A, a lady bee-keeper, has a bar-frame hive with two top swarms in it. B, a neighbouring bee-keeper, puts on a super for her, and then offers 35*s.* for the lot; but A wants 40*s.* B will not give this; but says, when leaving, that if the bees fill the super he will give the 40*s.* Time presses. B comes back and examines the hive, and finds the bees busy in the super. A comes out and asks him if the hive is to be his or hers? B answers that he will stand to his word, and gives her the 40*s.*

Query. When was the bargain made, and was he right to compete with the super?

[The question by the lady, 'Is the hive to be yours or mine?' leaves very little doubt but that the bargain was not at that time complete; and if the super was then well under way, the protest is a valid one. Had the agreement been completed at the first meeting, the price, 35*s.* or 40*s.*, to depend on a subsequent eventuality, B would be in the right; for the bees would have been his from the moment of putting on the super.—Ed. *B. B. J.*]

FIXING COMB-FOUNDATION, EXTRACTING HONEY, AND PREPARING HIVES FOR WINTER, ETC.

The first time I tried to fix foundation I made a complete failure. Most of the sheets fell in a confused mass on the floorboard. One sheet stuck fast. I took it out and examined it. I found the wax employed in fixing it had a very firm grip of the foundation. How was that? It had just been put on at the proper temperature—pretty hot. Since then I have not had a single sheet break down, neither have I had any difficulty in the way of sagging. The sheets I use for brood-frames are pretty thick; but I also use very thin foundation, and I have no trouble with it either, one way or another.

I have also extracted heather honey with Abbott's 'Little Wonder.' How often have we been told that the slinger *would not* do it! It's a fact it will! Hives which swarmed early have done well. I had the management of a hive belonging to a gentleman in a district where top swarms usually weigh about 50 lbs. or 60 lbs. at the end of the season. Well, I took about 50 lbs. of fine super honey from her first swarm, and left plenty of stores for winter. If the hive had been beside me, I think I should have taken more.

In preparing my hives for winter, I strengthen them by the addition of several brood-frames. By this means one is sure of having plenty of young bees. Frames with closed ends are, without the shadow of a doubt, superior to open ones. Now, I think it could be done—*i.e.* the frames made close-fitting—with very little difficulty. We want them open during summer, and the question is, How would you make them close-fitting during winter? Well, I would have the ends grooved with a half-inch plough; then by slipping a piece of pine, the size of the groove, right down to the bottom, the ends are made close. Your own system of doing it is perhaps better. I intend to make a hive composed of 1½-inch sections, and I will make it in such a way that the sections can be converted into an Observatory hive.—A. Cockburn, *Honey Grove, Cairnie-by-Keith, N.B.*

Echoes from the Hives.

Salisbury, Sept. 9th, 1880.—'Bees have had an excellent season here, and the yield of honey is above the average. One of our Italian bar-frames has fourteen bars full of honey. We also had a fair swarm from the same hive, and took a super of beautiful honey from it some weeks go.—H. A. K.'

Runcorn, Cheshire, Sept. 10th, 1880.—'All my hives died last winter but one in a Neighbour's Hive. About the 10th of May I drummed it and inserted a Ligurian queen. From these I have now two black stocks, two Ligurians, and two hybrids (queens mated with black drones). I have also harvested 30 lbs. weight of beautiful honey. The honey was all taken from the black bees, as, wishing to increase the stock, I drummed the Ligurians at the end of June, and they afterwards sent off two casts, small, but, with feeding, I hope to make good stocks next year. All my stocks except one are in frame-hives now; I think they have done very well.—Mat. Steele.'

A Good Harvest.—'Last winter I had four stocks. I have now seven, from which I have taken 340 lbs. of honey.—E. S., *Hailsham, Sept.* 17.'

The Harvest.—'The last queen you sent was a very fine one, and proved a first-rate one in all respects. I kept her three years, and reared all my young queens from her brood during that period. She disappeared some time between autumn and spring this year. It has been a very indifferent honey season in this locality. I have just been to examine some hives in a neighbouring garden, and find them almost in a state of starvation. A very large and strong Stewarton hive of my own gave me 50 lbs. of fine super honey, and is well stored for the winter, a second yielded 25 lbs., and a third not more than 8 or 9 lbs. The two last required feeding to prepare for the winter. These are the only hives which

were devoted to the storing of honey in my apiary. In the south, and also, I believe, in the north, the season has been much more favourable.'—J. E. Briscoe, *Albrighton, Wolverhampton, 18th Sept.* 1880.

Dumfries, Sept. 20.—'The small swarm of Ligurians I had from you some time ago is doing nicely. I have two nice queens raised from eggs from it which have been cross-mated, and have now a lot of brood in their hives. Other two I caused to be reared later on have not been mated in consequence of scarcity of drones: so to save the bees I joined them to other stocks.'—J. S.

Limerick, Sept. 23rd.—Queries.—'1. What is the probable reason the supers were not built in? 2. Will bees build in hives and supers that have been used already, or should there be new ones? 3. Are the two hives waxed together to be separated now? 4. How can robber-bees be driven away? 5. Shall I unite the hives I spoke of? and do I understand the correct way of doing it? 6. What am I to do with the queens? 7. What am I to do with the brood-comb in empty hive? 8. Is the proportion, and quantity, and length of feeding I mentioned, all right? 9. What is the cause of the little heights (lumps) I saw on the floor-board? 10. Ought straw hives be covered from rain, or placed in a shed during winter? A friend is making me a present of a wooden bar-frame, but I do not mean to use it till next year, till I see how I succeed this winter. I do not mean either to go to any expense unless next spring I find things doing well.'

[The foregoing, with a preamble of six pages of experience, thoughts, and suggestions, come from a non-subscriber, who so far carried out the resolution to incur 'no expense,' that both stamp and envelope were omitted from the enclosure. To reply to this would entail the rewriting of nearly the whole of our series of leaflets, which we do not feel called upon to do when they can be had for sixpence per dozen. We must draw the line somewhere.—Ed.]

Leatherhead, Sept. 24.—'One of your cheap Crystal Palace hives gave out a swarm late in June. I placed an empty Woodbury on the stock afterwards, and they put about 40 lbs. into it, besides becoming very heavy below. Pleased me very much. This was done without the advantage of the heather.—J. E. R.'

Comptons Lea, Horsham, Sept. 24, 1880.—*Foundation.*—I have tried the five samples of foundation you sent me, and shall be pleased to send you a report upon it when I have prepared my bees for winter, and am settled at home again. The season has been a most remarkable one. I do not recollect when they have worked so well or so continuously as they have done this summer. With the exception of about a fortnight to three weeks at the end of July and the beginning of August, honey has been collected without a break-up to the end of August. The extractor has been incessantly at work, and although with me profit is not a first consideration, I can unhesitatingly say the bees have not only paid their way, but have made a handsome return. They cost nothing for sugar last spring, as I then extracted sufficient stores in the spring which I used diluted to stimulate the bees to early breeding, and by carrying out the system as I advocated some years ago, I had my bees strong enough for collecting, and by extracting continually, they have kept breeding all the summer. *Buckwheat.*—I must speak well of buckwheat. I sowed about an acre of it for trial, and the result was that the bees stored a large quantity of honey from it. They worked on it during the earlier part of the day in immense numbers. *Limnanthes Douglasii.*—I saved a lot of seed of Limnanthes Douglasii, and if any bee-keeping friends wish to try it, and send me an addressed stamped envelope, I shall be pleased to send some. Now is the time to sow it, and it comes in early in spring. *Diagrams.*—I see you refer in the *Journal of Horticulture* to the diagrams at the Show. I am not sure, but I believe I was the first who had Girdwoyn's diagrams and text in 1876; and in 1877 I lent them for exhibition and lectures. Mr. Tite had them at Yeovil, Mr. Hunter, and others. I also showed them (although not entered) at the Alexandra Palace, I forget the year. The other diagrams which I have shown at South Kensington I purchased of you at the Crystal Palace Show. Of course, this has nothing to do with your showing them, and as long as the schedule stands as it does, you are quite justified in doing so.—Thos. Wm. Cowan.'

[The last part of the above has reference to the following, which was sent to the Editor of the *Journal of Horticulture*:—

'Diagrams of bees at South Kensington.

'Gentlemen,—In your impression of the 12th ult, p. 154, allusion is made to an award of a Bronze Medal to Abbott Brothers for exhibiting a set of diagrams, said to be "now perfectly well known, and in which Abbott Bros. deal," and in the same paragraph the judges are certainly not complimented on their taste in making the award. In reference thereto, may I be allowed to state that the firm I represent do not deal in the said diagrams, that they never have had or seen other than the one set alluded to, and that they have never offered them for sale? They were presented to me in 1877 by M. Rothschild, of Paris, and so far from their being "perfectly well known," I have never heard of or seen anything like them, save in the diagrams for which Mr. Cheshire was awarded a Silver Medal at South Kensington in 1879, and which have been since republished by the British Bee-keepers' Association.—C. N. Abbott, *Fairlawn, Southall, Sept.* 11, 1880.'

Hereford.—'Quite two-thirds of the hives in this district did not survive last winter, many persons losing all their bees. I saved all mine (11 stocks) by means of timely feeding. The honey season has been good; cottagers who are fortunate enough to possess bees have their hives crammed with honey. I secured a fair harvest of extracted honey, and in sections; the sections sold like "hot cakes" at a local grocer's. I believe no one need have any difficulty in selling neat sections of honey, if it be shown in a local tradesman's window, with a neat printed card showing it to be native produce. Ivy will be in bloom in a few days, if the weather be as fine as it has been. I think the bees will gather considerably from this source, as I never saw such a fine bloom.—A. W.'

Ayrshire.—'Some of our hives have risen immensely these last few weeks. I have taken a 53 lb. super off one, and it is over 100 lb. now. The "Renfrewshire Bee-keeper" has some over 200 lb. each, and "Thomson" has some nearly that weight, so that we should have plenty of heather honey in the market. Eighteen pence per pound is freely given for it; so that bees should be profitable this season. Perth and Stirling Shows were both good. I was at both last Saturday. I see you have had plenty of work to do in Ireland.'—R. B. J.

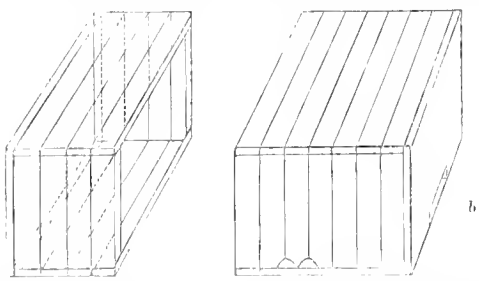
Whitchurch, Blandford.—'The season has been hereabouts unusually good. One super of mine—47 lbs. in weight—was filled in less than four weeks, and taken from a hive which had swarmed for the third time (this swarm hived for itself), and not returned to the old one, and to which was added a swarm which had lost its queen. It must, therefore, have been queenless for some time, which makes the result more curious.'*

* Page 29 of *Journal* for June shows why queenless stocks in a good time gather large harvests, and suggests the removal or confinement of the queen during a good honey yield.—Ed.

Queries and Replies.

QUERY No. 349.—*The Giotto Hive.*—Will you kindly inform me in your next *Bee Journal*, who is the publisher and also the editor of the 'Giotto' system of hive-making? You will also oblige by giving me your opinion of the same, whether it is suitable to winter bees in or not. Being pretty handy with joiner's tools, I thought the system would be just the thing for me, as I could make the hives both easily and cheaply. As I know nothing of, or know anyone that has had any practical experience of, the above-mentioned hives, I shall esteem it a great favour if you will give me all the information you can respecting it, as I have a notion of adopting it.—JOHN DEARDEN, *Brindley, Nantwich, Cheshire, Sept.* 11, 1880.

REPLY TO QUERY No. 349.—In 1876, a pamphlet entitled 'The Italian System of Bee-keeping,' by Captain Arthur Danyell, was published at the *Field* office, Strand, in which the 'Giotto' principle of hive-making is the special feature. It contained the substance of several interesting letters which were sent to *The Field* from Italy by Captain Danyell, then a resident there, and the simplicity of the mode of hive-construction he propounded attracted considerable attention, but the 'principle' has never met with the consideration it deserves. The Giotto, as then described, was an almost exact imitation of the Huber-leaf hive, and like it was constructed of separate frames set side by side, as sections are now placed, to form sectional supers, the frames forming the hive walls as the sections now form the supers, and a board at each end made the hive complete. The arrangement gave considerable play for ingenuity, and by the introduction of new frames between the end boards, the hive could be indefinitely enlarged, or by a reversal of the process, contracted to suit the smallest swarm. The principle of construction will be understood by reference to the woodcuts, which show a Giotto parted near the centre. Each frame, as there represented, is made of inch-board, 1½ inches wide, so that when together and the ends in place, they form a *complete* hive, but originally the bottoms of the frames were only small strips of wood, kept up from the bottom ends of the frame, leaving room beneath (the strips) for bees to pass, an arrangement that necessitated a separate base on which the frames could stand, the base contemplated being the top of a wall or anything similar, but a plain board would answer equally well. The entrances, for there were a number of them, were cut out of the



bottom corners of the frames as indicated at *a*, but it was equally easy to make one at either end as at *b*, and a feed-hole could be cut in the top of either frame, or half-way into any two of them.

The Giotto Hive of Captain Danyell was exhibited in Class 4 at the Alexandra Palace Show of the British Bee-Keepers' Association 1876, 'For the best hive for use on the collateral principle,' but no prize was awarded, the silver and bronze medals offered falling to Messrs. Hooker and Cowan, the hive of the latter being on the Giotto principle of construction. As may be inferred, the frame-bars of the Giotto being an inch in thickness, there is great liability to crushing the bees when the separated frames are being replaced with the bees upon them, and if they do not fit closely there is plenty of room for the free use of propolis; but, as we have often shown, these objections can be naturally obviated by using seasoned material and good workmanship. The only maker of hives of the kind in question that we are acquainted with, is Mr. Isaac Hale, of Horncastle, who departed in a great measure from the original pattern by elongating and narrowing the top bars of the frames so that they would hang in a box as in ordinary frame hives, and access was thus given to supers, while the bottom rail being already narrow, gave access, as in ordinary hives, from beneath the frames: and hives of this and the original Giotto pattern have many times been exhibited by him, but the judges have given no award. We have many times advocated the principle of the Giotto in respect of the frames being of sufficient width to touch each other at the sides, and we do not despair of enlisting the sympathy of the bee-keeping public in that behalf at no distant date; for we hold that no hive that has ever been made so closely approaches the requirements of a bee-nest, and the advantages of such an arrangement will presently be made obvious. To our mind they are so now; we have ventilated our ideas, and at the coming Dairy Show intend to exhibit a hive on the principle we have avowed. A hive, such as we have here illustrated, can be made by any amateur carpenter who can drive a nail and saw off the wood to the length, and though when made it would not be all that is desirable, we do not think it would deserve all the hard things that were applied to our suggested hive on a similar principle, on page 73.

In the hands of the inexpert, it would probably not be so 'convenient' as a better class of hive in which conveniences have to be charged for: but as a commendable hive for cottager's use, we think its adoption would be a move in the right direction. It would compete with the skep in regard to cost, and the combs in it being moveable (though under difficulties), gives it an immense advantage; and considering that in such hives the expert could manipulate (the difficulties notwithstanding), the money value of a cottager's bees would be considerably enhanced. Leaving out for a moment the idea of bee-crushing and propolising, or as a set-off against them put the wretched principle of fixism, and the inexpansive and non-contractile nature of the uninvadable skep, and let us see on which side the advantages lay.

The Giotto hive, in its roughest state, is better than any other frame hive, and equal to the skep as a domicile for bees, their comfort only being considered, and in point of conveniences for the bee-keeper, crude though they admittingly would be, it stands prominently in advance of the skep. It can be increased or diminished in size at will, it can be divided at any point for queen-excluding or confining purposes during the honey harvest, a thin board slid in between the frames would make it into a twin hive, or it could be cut up into nuclei for queen-raising purposes, *ad lib.*: for feeding purposes, a couple of spare frames at the back within the end board, would afford a most secure apartment where robbing would be impossible, and an additional pair of frames in front and as many at the sides as would enclose it, would, when covered, form excellent protection from outer cold. Strips of board, 1½ inches wide, cut into the desired lengths and nailed together, would form the frames, and two pieces of the size of the frames when made, would form the ends, and excepting guides, or foundation, an entrance and a roof, the hive, when tied, or otherwise fixed together, would be ready for the reception of the bees. We do not pretend that it would be all that could be desired, but with it the typical ignorant cottager could do all that he could with a skep,

and, becoming more enlightened, would soon get out of the brimstone pit, and pursue the pleasant and profitable path of bee-CULTURE.—ED. *B. B. J.*

QUERY No. 350.—A curious case of dispute about bees occurred in this neighbourhood. A had a first swarm swarmed on the 19th June. B had a second swarm swarmed on the 8th July, and they were both put into empty hives and conveyed some distance to the clover, where they stood there near each other. A's hive swarmed a virgin swarm on 10th August, and a swarm was found on the 29th August, and was claimed by B. Was it possible that his second could swarm? Your opinion will oblige.—BEE-KEEPER, *Thankerton.*

REPLY TO QUERY No. 350.—It is *possible* for a second swarm to swarm, but such occurrences are by no means common. If B *found* the swarm in question, he has a fair claim to it; but if he argues that it came from his hive, a reference to the combs would help to clear up any doubt, for if it did, there would be queen-cells in the usual way. The law decides that whoever finds a stray swarm may claim it; but it is not clear whether your question is as to ownership, or the possibility or probability of a cast swarming.—ED.

QUERY No. 351.—*Preserving Pollen.*—How can I keep combs that contain pollen sound for next spring's use, as they are getting mouldy?—W. H. J.

REPLY TO QUERY No. 351.—By adopting the means the bees do, *i.e.*, by filling the pollen cells full up with honey, and sealing them over. This may be done by pouring honey or syrup into the cells, wiping off all superfluity, and brushing over lightly with hot wax. If this be not thought practicable, the combs could be placed close together in a tin case, and all interstices and cells filled up with syrup, to which a little salicylic acid has been added. Such combs would, when drained, be admirable as helps to poor stocks in spring. The syrup should be poured into the can very gently, or it would not find its way into the cells.—ED.

QUERY No. 352.—*Breeding and Feeding.*—I am very much puzzled by conflicting statements about the period when breeding ceases. I went to Grantham Show to learn something, and did so. One of the 'swells' however, told me *not* to feed now, but to feed in January instead. Baldwin said, when I mentioned this, Feed slowly a month, then quick, which seems to correspond with all I have read (Root, &c.), and common sense. But, as if to prove the contrary, I found no brood at all in two hives, which have, or had till lately, queens. These two hives I have been feeding as directed. Am I to suppose them queenless? To one of them I united a hive of condemned bees a fortnight ago. They seemed to be friendly enough; but there's no brood. As I am not a good hand at spotting the queen, I can't be sure. A line in your next issue I should esteem a favour.—H. V. E., *Oakbrook.*

REPLY TO QUERY No. 352.—It is by no means easy or safe to lay down rules respecting the internal economy of a bee-hive; but in a general sense breeding will not be continued if there is not an incoming of honey which will warrant the increase of the population. Bees commence, and continue breeding under the influence of excitement, however produced.—a broad statement, the broadest we could devise, and so long as the excitement is kept up, so long will breeding be continued. In the spring, a few fine days, and the opportunity for flight, without actual incoming of honey, may be the exciting cause; in summer, as indeed at all times, the income from orchards and fields is sure to cause ovipositing by the queen, and its continuance will warrant the workers in raising brood from the eggs so laid, but as soon as the incoming ceases eggs and larvæ will disappear; and if the cessation has been sudden, immature, white bees will be found at the entrance of the hive, thrown out to prevent the production of other consumers. In winter, in the coldest weather, the great quantity of honey consumed in the production of the heat necessary to life, will excite bees to breeding. The excitement consequent upon a dysenteric condition—the bees dying by scores daily, and the hive being most unhealthy—will induce breeding; and it will continue while the excitement lasts. The probability of an aged queen dying, or becoming unfertile, though it be in the depth of winter, will induce the laying of a few eggs, and the raising of a new queen, though the young one will (often) remain with, and be as useless as, the unfertile one; and there are many other phenomena in respect of breeding with bees, that can only be traced (*pace* the class of 'swells' above alluded to) to excitement. So far as we know, this suggestion starts 'a new hare,' and probably it will be well hunted; but we have every faith in the argument implied in the theory.

Our correspondent may rest assured that the continuance of breeding in autumn is governed by the incoming of honey as a rule. When the latter fails, breeding will cease, but may be continued by prolonging the incoming artificially. See our *Leaflet on Feeding*, price ½*d.*

QUERY No. 353.—*White Brood.*—Can you explain the following? I opened a hive on Monday and found dead brood; not presenting any of the appearances of foul brood, as described in books, but more like chilled brood. The caps of the cells had been opened, and some of the larvæ were at the bottom of the cells, looking like white bees after they have been sucked, merely the skins being left; others were intact, but dead. The hive had done well during the summer, and the queen is all right. I am very pleased with the Combination Hive you supplied me with; so much so, that in future I intend using no other.—EDGAR S., *Sept.* 15, 1880.

REPLY TO QUERY No. 353.—The symptoms suggest that the harvest is over, and that the bees have suddenly found themselves without income, and perhaps (through having been 'deprived') (?) without stores; and being in danger of starvation, have determined to stop the production of consumers. 'Feeding' is the remedy for such a state of matters, as so often advised in *Bee Journal.*
ED.

QUERY No. 354.—*Quilt and Ventilation.*—The quilt that I use with my hives consists of a sheet of linen and four or more folds of bagging. I find that the bees have cemented the linen sheet to the upper bars, and have coated the under side of the sheet between the bars with a layer of wax or propolis, making the sheet nearly, if not quite, impervious to moisture. I should be glad if you would state in your next number whether I should remove the sheet and substitute a clean one, or leave the present sheet as it is during the winter.—W. B. H.

REPLY TO QUERY No. 354.—It is perfectly natural for bees to stop up with propolis every means by which heat can escape from a hive, or draught, or enemies obtain admission. But it has been demonstrated that *upward ventilation without draught* is absolutely necessary to safe wintering; and, therefore, during October, when bees have ceased 'gathering,' we advise the removal of the impervious quilt, and the substitution of a new, or at any rate, a clean one, which will then keep both clean and porous.—ED.

QUERY No. 355.—*Winter Crowding. Wax Moth.*—Is it really advisable to contract the size of hives for the winter season, and if so, what is the best method of keeping the surplus frames of comb (some of them containing a little sealed syrup), so that they may not be receptacles for the eggs of wax-moth? Our hives at present are square boxes, 14½ by 14½ by 8¾ in. inside, and have not a dummy or moveable side, so shall have to extemporise.—A. L. S.

REPLY TO QUERY No. 355.—It *is* advisable; and we strongly recommend you to confine the bees to as few combs as they can occupy, it having been proved that

they winter best when crowded together. One of the advantages we claim for our wood-foundation is, that combs can be made to fit the hive, and thus render special division boards unnecessary; and as the cellular comb is much less convective of heat than anything solid, we have faith that it will eventually be largely used for the purpose. To preserve combs from wax-moth we hang them in a dry, airy room, where they can be seen and examined, and find that they escape the attacks of that pest. It would appear that the larvæ of the moth cannot exist without moisture, which may be the reason for their immunity; but now that foundation is so cheap we prefer to melt up all combs rather than give them warehouse room, as one is able to produce new combs in a short time and prevent many risks.—Ed.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Burwash Common.—*Hiving bees from a house partition.*—Quiet them in the usual way, as per leaflet on the subject, remove the boarding and cut out the combs, and after brushing the bees into the hive, tie the combs into the frames, and put them in their places. When all are transferred, place the hive as near the old nest as possible, and if the queen has been put into the new home the bees will take possession, if not she must be sought in the old nest, and transferred to the hive. At night the latter should be taken away a distance of two miles, and the entrance-way to the old nest completely blocked up. The Bingham smoker here is 5*s*.

Run Honey Candying.—We know of no way of preventing honey candying except by the admixture of material that would be considered in the nature of adulteration. Can anyone help a lady bee-keeper who wishes to preserve her honey in a liquid state?

Omagh, Co. Tyrone.—*Transferring.*—If the quantity of bees to be added to the contents of the skep will fill the hive to which they are to be transferred the work of the bees will be lightened, and cheapened by the introduction of large sheets of Abbott's flat-bottomed foundation. We mention this particular kind because it is least likely to break down or sag. In the present case it would be well to put it interstitially between the frames that are filled with the comb from the skep. Leave a quarter inch of space at both sides of frame and at the bottom to provide for possible stretching.

Bournemouth.—*The Quilt.*—The quilt is intended to supersede the crown-board and to lie close upon the frames, thus preventing the too rapid diffusion of the warmth of the hive, yet permitting gentle upward ventilation. A feed-hole can be cut in any part, to be covered with a feeding-stage or piece of perforated zinc. The pieces cut out will form a pad to cover the aperture when the bottle is not in position.

J. R., *Cumberland.*—*Showing Bees to Visitors.*—We do not think any good could arise from publishing the letter to you, as it is more of private than a public nature. Your friend has wearied of showing his bees for nought, and the charge named (10*s*. 6*d*. per visit) is evidently intended to be prohibitory. It is not every one who can afford the time and the loss to his bees which promiscuous exhibitions entail. We have many times devoted nearly whole days to showing half-a-dozen visitors the same or similar things, whereas if they had all come at once, an hour and the opening of one stock of bees would have sufficed. You should get the Bee Tent to visit your neighbourhood, and then *all* could see how easy it is to perform the various operations, and there would be no hardship to any individual.

*** *Though we have given four pages extra this month, we are reluctantly compelled to postpone some most interesting information respecting the progress of Apiculture in New Zealand, and other communications.*

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THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

[No. 91. Vol. VIII.] NOVEMBER, 1880. [Published Monthly.]

Editorial, Notices, &c.

NOVEMBER.

Now that the last announced Exhibition of Hives, Bees, and their Produce, held by the British Bee-keepers' Association in conjunction with the Annual Dairy Show of British Farmers at the Agricultural Hall, Islington, has been held, and bees have gone into winter quarters, it may fairly be assumed that 'the season' of 1880 is really over; and so far as the bees are concerned, we hope it is so, for, should there arise any necessity for interference with them, it will be because they have not been prepared for 'wintering.' Whatever may occur in respect of the bees themselves, though we trust they will be comfortable during the next four months—and they will be, if our directions have been adhered to—we must not forget that the long winter evenings give splendid opportunities for imparting the knowledge of bee-culture, which is so essential to those who keep bees with the expectation of profiting by their labour.

Bee-keeping, thanks to the British Bee-keepers' Association, has become a recognised industry throughout England and Scotland, and county and other local associations have, in response to its call, sprung up in all directions, and have done great things in spreading a taste for, and a knowledge of, the science and art by which it is made profitable; but very much remains to be done.

Ireland has been made the subject of special care; the Tent of the British (the central) Association has been through three divisions of that beautiful and highly fertile land, and by its exhibitions has stirred up the people, and through the press the profitable nature of the pursuit has been made widely known, and will be largely entered upon. The Principality of Wales has not yet been (to our knowledge) the scene of a bee exhibition, nor has it established an association for the promotion of bee-culture; but we have the certain knowledge that there are within its boundaries many advanced bee-keepers, and that the leaven of improvement is working well. All this is highly satisfactory as far as it goes, but we want to see—and every lover of bees is with us—a general determination to carry the knowledge of bee-keeping home to the people in every village in the kingdom; and now, thanks to the British Bee-keepers' Association, whose diagrams and key give all needful assistance to the expert bee-keeper, there is nothing to prevent this being done, if only the will to do be present. We have no desire to encourage the employment of a professional lecturer, who may have learned his lesson by rote, and who will deliver it with parrot-like precision. We want to see volunteer-instructors in every village, or drawn from their vicinities; men who have had successful experience in the management of bees, and who will be able to impart their experience in language that will be understanded by the people. We hope to see means devised by which the prejudice of individual districts may be broken down; we have had ample experience of its existence, and in our experiments at exhibitions of manipulation have never so well satisfied our audiences as when we have operated on the bees of their own localities—we therefore feel that to be convincing on the merits of bee-keeping, and to give weight to opinions on the best methods of management, the speaker should be a local man, who has been successful beyond a doubt in the practice of the principles he recommends. We are fully aware of the difficulties that stand in the way of obtaining from the ordinary ranks of country life men willing to address their fellows; we quite understand, having felt the terror which the sound of one's own voice when first addressing an audience, inspires in the heart of a speaker, and do not counsel that first attempts should pretend to exhaustiveness, or that they should take even the form of 'lectures,' which, as a

rule, are like sermons meant to be listened to, but not discussed in the presence of the speaker.

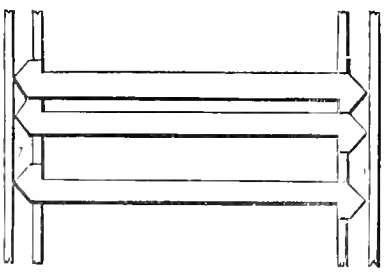
Our inclination is towards a more humble, yet not less efficient, way of reaching the minds and disturbing the prejudices of the class for whom bee-keeping is prescribed as useful, and in whose behalf all our Bee-keepers' Associations have been especially formed. We would suggest that *Conversations on Bees* should be encouraged, we prefer an English term as less likely to alarm the timid, which might take place at any of the usual places of amusements, conjointly with music, singing, penny readings, or other attractions, or alone when sufficient interest has been created to attract an audience. At such meetings a very few words from the presiding chairman would be sufficient to introduce the subject; and instead of it being left to the volition of the 'expert' to give a formal address, the chairman might gently lead him to explain the objects brought for exhibition,—the hives, supers, diagrams, bees, combs, queen-cells, &c., and thus elicit in drops the golden experiences that, nugget-like, are stored away unkenned in many an humble mind. These things are possible in every village in England, and in many elsewhere; but who is to take the initiative? As a rule, the clergy are ever ready to do whatever may be possibly helpful to their parishioners let the suggestion come whence it may, and others will doubtless accept the suggestion. The clergy are at the head and front, and on all sides of that which will improve the condition of their people, they are, as a class, the best bee-keepers in the land, and afford the best examples; but the peasant mind can scarcely be brought to believe, either by their exhortation or example, that there is not something necessary beyond the means of the cottager to secure profit by the improved methods of bee-keeping. We, therefore, strongly urge those who have opportunities to try the effect of the means we have suggested: there are club-rooms, school-rooms, working men's institutes, reading-rooms, coffee taverns, and the like, the frequenters of which can best be 'got at' by men of their own standing, and with a little help from the prime mover, who should be able to draw largely from his county or neighbouring association for the means of illustration, much good might be done.

While upon this topic, we cannot but refer to what we conceive to be the duty of every Association, according to its strength, and the influence it has at its command. In the first place, there should, for winter use, be a lecture-box, to be lent on loan in aid of any demonstration that may be about to be made on behalf of bee-keeping within its lawful radius, such box to contain a frame-hive of a kind suited for cottagers' use, and with it all the requisites that the complete system demands, so that in the presence of the audience the speaker might show how every needful fitting could be rigged, and how all expensive apparatus could be dispensed with; while at the same time there might be displayed examples of the results of the improved method of bee-management. The loan of the box should be gratuitous; the members of Associations should learn that their subscriptions are doing good in the direction for which they were given, and it should not seem that every effort that is put forth is but a pretext for obtaining money. There is, however, one item the loan of which we hope to see discouraged—we allude to the Diagrams illustrating the bees, &c, that have been published by the British Bee-keepers' Association. We have had many applications for them in the way mentioned, the would-be borrowers offering to pay for their use; but in all cases we have steadily declined to lend them, because we think it would be exceedingly unfair to that Association, and because we think that every village ought to possess them for the use of those frequenting their respective rendezvous. This suggestion may not accord with others' ideas, and may not be approved by the Association in whose interest it is put forward, but it is 'ours;' and considering that the B. B. K. A have incurred a large expense in providing their diagrams, and practically give (in them) a guinea's worth for eight shillings to non-members, and for five shillings and sixpence to members of their Association, in common justice we think there should be no lending of them to interfere with their legitimate circulation. Nevertheless, and to prevent the idea that our suggestion springs from illiberal motives, we offer to any one who wishes to acquire the diagrams and key for illustrative purposes, as suggested, the use of a box containing a set of samples, such as we have named, including the said diagrams, for the sum of eight shillings and carriage both ways, the diagrams to remain the property of the hirer, who will, as a matter of course, be held responsible for the safety of the samples sent. We trust all our Associations and caterers will do likewise.

ABBOTT'S IRISH HIVE.

In devising a hive for Ireland, we have taken into account the heavy cost of transit from England and Scotland, and over all the Irish railways, and have endeavoured in its construction to eliminate all that may puzzle the peasant mind, either in its manufacture or use. The cost of transit induced us, in the first instance, to prepare a hive in pieces, to be put together on arrival at its destination; but seeing that, except in the hands of an expert, the pieces,

like those of the latest 'Simplicity' from America, might require a model to enable their recipient to put them together, we abandoned the idea, and made a pattern that any one may readily copy who can use a saw and hammer. To minimise first cost to the purchaser, the hive is so constructed that for travelling purposes it may be packed complete in a parcel not more than 12 inches high, the length and breadth being, of course, that of the boards of which it is constructed, as would be the case with a hive in pieces. No packing-case is needed, there being no parts exposed that can be injured in ordinary traffic; and when received nothing will be necessary but to set it right side up, and insert the wax-sheets or guides to ensure straight combs, and to introduce the bees to them. In planning a hive for a new country, even a country in which there are not already a host of hives or hive-makers, whose existence could not be ignored, we have been guided by the light of our own experience, and encouraged by that of others, to give preference to the form which chiefly obtains in the best Continental apiaries, and which has been introduced into England in Abbott's 'Combination' hive. Accepting the principle involved therein as the best for all practical purposes, we have arranged our Irish hive of capacity to contain about ten frames, more or less, of Woodbury type; but having the Abbott's top bars, which are universally esteemed of the best shape for ordinary



use since they keep their own distances from each other, and their broad ends give steadiness to them individually, features not to be found in any others; and any number of sections may be placed at the top, or at the back of the brood-nest. The hive will be made of inch pine-boards, after the manner of the Combination hive, and can be used in all respects in the same way, the frames will be placed parallel to the entrance, and for summer use will be to the front, but for winter will (or should be) put nearer the centre for protective purposes, as explained on p. 103 of *Journal*. For convenience of transit, the roof has been arranged so that the body of the hive shall slip into it, as far as may be, thereby contracting it telescopically, and reducing it for storage. As will be seen from the figure, which suggests the outline of the hive from the front, the roof or super-case would slide over the body-box; but to prevent this while in use, ledges are nailed on to the sides of the latter at *a a*, and the roof resting upon them keeps all snugly confined, and amply protected.

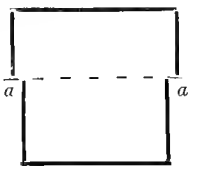


Fig. 1.

As will be seen in fig. 2, the hive is capable of use as a twin-hive, it being competent for *b*, or *c*, to be used for storing honey, or for breeding purposes.

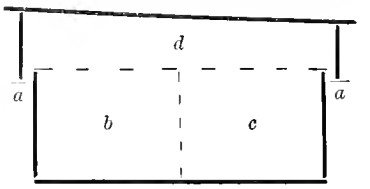


Fig. 2.

When packed for transit, the body of the hive is inverted into the super-case, and the floor-board

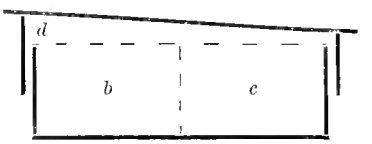


Fig. 3.

fixed upon the quilt and frames gives them perfect steadiness and security, when the whole will present a compact appearance, *b* being occupied with frames, *c* with sections, and *d* with the wax-guides or foundation, which is to be fixed into the frames.

We have here outlined our plan; we provide for all reasonable contingencies, the hive is expansive and contractile; may be used in various ways, and to our mind cannot be improved except by the use of frames that touch each other, as in our modification of the Giotto hive, of which we have often had occasion to write. In our next we propose to give ample directions for making the Irish hive, and in the meantime shall be prepared to supply patterns, at lowest cost to those who prefer them.

BEE-KEEPING IN NEW ZEALAND.

Ligurians not there.—We have had the pleasure of supplying a parcel of Ligurians to Mr. Charles Chaplin, late of Westbury-on-Trym, Bristol, who lately has 'swarmed' off to the antipodes. The queens were sent at the request of Dr. James Irving, late of Nottingham, the President of the Canterbury Bee-keepers' Association, who, seeing by the *Journal* for March last, that Mr. Chaplin was going out, wrote:—

'Dear Mr. Abbott,—I read with great interest Mr. Chaplin's letter in the March No. of *B. B. J.* just received. Have written to him to ask him to communicate with you, with a view to bringing us out some Ligurians,

which, I assure you, do not exist here or in Australia. The Americans won't do. Please do what you can to help us in this. 'Believe me, yours truly,

'*Nottingham Lodge*, 'JAMES IRVING.
'*Christchurch, New Zealand*,
'*May 2nd*, 1880.'

Our farewell was taken of Mr. Chaplin at the South Kensington Show, and the Irish tour prevented personal assistance to him in the preparation of the queens for the journey. Our junior supplied Mr. Chaplin with five, in full vigour, from our hives, in which they had been well rested; and to that able bee-keeper will belong the credit of delivery in New Zealand should they survive the passage, which they should do if care and attention will ensure it. Dr. Irving's assurance that Ligurians do not at present exist in New Zealand or Australia, may be fully relied on.—ED. *B. B. J.*

The Editor of the *Canterbury Times* (March 13, 1880) remarking on a communication respecting hives and frames, says:—

'Our correspondent will doubtless have observed that the object of the Rev. G. Wilks has simply been to design such a modification of the bar-frame hive as to enable cottagers to adopt the system at a nominal cost. The reverend gentleman will in future use the Abbott frame (the standard adopted by the Canterbury Association) in all hives issued under his supervision. We shall be glad to receive diagrams and explanation of the Giotto hive, as used by Mr. Caldwell.'

This indicates that the Canterbury Bee-keepers' Association, under the able presidency of Dr. Irving, has profited by seeing the mistake of our British Association, in not at first adopting a 'standard frame.' We urged the question some years ago, when hive-makers were few, and uniformity could have been secured at small cost; and now that hive-makers' difficulties have multiplied exceedingly, we find the Judges at the late Kensington Show recommending the idea. See report of Judges in Class 27, p. 67 *B. B. J.*

We are pleased to see that Dr. James Irving is taking a leading part in the antipodes in promoting scientific bee-culture, and is rapidly making converts. The *Canterbury Times* gives a good report of his doings, and the interest that necessarily attaches to the earnest efforts of a former subscriber and personal friend is our excuse, if one be needed, for extracting from that paper. Under the heading, 'Dr. Irving's Experiments,' we read:—

'At four o'clock yesterday afternoon, the company had reassembled, for they were most anxious not to miss the opportunity; and the doctor's promise was that in the event of the weather being unfavourable on Monday, he would attend on the first fine afternoon. The doctor was punctual, and the entertainment given by him was unique. Nothing at all approaching it, I believe, has ever before been witnessed in this colony, and everyone was both astonished and delighted. Dr. Irving's first care was to explain to his audience what were the requirements of a complete hive; and in giving these (45) fundamental rules, he enlarged upon them, sometimes replying to a long string of questions from one and another of the audience, and at times quite an animated debate was proceeding. An empty hive was used to explain every detail, and it was made abundantly evident that with a framed-hive as planned by Dr. Irving, absolutely anything in reason could be done with the bees.

'Old Louis Langlois was looking on, quietly smoking his short pipe with intense satisfaction, and I asked him what he thought of such a plan of bee-keeping as that. He expressed himself as being well pleased so far, but he preferred to withhold any definite opinion until we had inspected the tenanted hive, towards which we were now moving. Langlois was evidently disturbed about something, but I could not yet understand what it was. There was a short halt, just before approaching the bees, to enable the visitors to don their bee dresses, and certainly the appearance which was soon presented was ludicrous in the extreme. Some had provided themselves with heavy-looking black veils, extending at a considerable distance from their faces by means of an enormously large false hat-brim of cardboard, and they might have been taken for some new order of priests. One gentleman, in addition to his big veil, had a broad strap tightly buckled roung his chest, lest perchance some prying bee should insinuate itself beneath the closely-buttoned coat. His hands were encased in hedging gloves, with added gauntlets, and a liberal application of twine to the bottoms of his bifurcated garments had made all secure in that quarter. "Aha! zee bees won't sting to-day, and zere will be no fun." Louis Langlois was at my elbow, and he it was who spoke. I took the hint, and thrust back the veil which I was in the act of taking out. There was a fair sprinkling of uncovered faces and hands, for some of the spectators knew that they would experience no ill effect from a sting, and so were secure in their immunity from suffering.

'The cover of the hive being gently lifted off, the frames and their contained combs were exposed to view, with the bees about them in rich brown clusters. They had been tenants of this new home only twelve days, but the work they had done was marvellous. The doctor took out the combs one by one, explaining the mode of construction followed by the insect architects and builders, and the variation of worker, drone, and queen bee cells. For some time he could not find the queen, so thickly were the bees crowding about the golden walls, but she was at length detected, and the frame containing the comb over which she was travelling was gently lifted out, and placed in an exhibition hive. This hive consists of a bottom, ends, and top of polished wood, the sides being of glass, and the distance of the glass sides from each other is only sufficient to admit of one sheet of comb and the attendant bees being included. On the hive being closed, no bees can escape, and their movements can be minutely examined. There was something extremely beautiful in the stately march of the queen, elegantly shaped, deliberate in all her movements, and obsequiously made way for by her loyal subjects. But of far more practical interest was the proof given that in a hive of suitable construction the bees are made to build perfectly flat sheets of comb, and that at any time a slice may be taken without injuring a single bee. For an hour and a half Dr. Irving entertained his visitors, and during the greater part of that time he was giving explanatory illustrations with the crowded hive, yet so far as could be ascertained there was no sacrifice of the life of even a single bee, and so little did they appear to be disturbed by the mode of inspection adopted, that no one even felt a sting. The doctor also showed a slinger, made on the American principle, for extracting honey from the combs, and a large sheet of comb was emptied in less than half a minute. It will readily be perceived that by this method of taking honey, the empty comb can be returned to the hive, to be cleaned, repaired, and refilled, and that as a result the labour of the bees is economised, and the produce of honey materially ang-

mented. An ingeniously simple apparatus for feeding bees in unfavourable weather was also shown. Both the feeder and the slinger were manufactured by Mr. G. P. Day, Colombo Street.

'I was now made aware of the reasons for the uneasiness which Louis Langlois had shown. Champion of the old system of bee-keeping though he was, he frankly admitted that he was delighted with the new plan; but he was disappointed that the bees had not shown their irritability and "made ze people dance about." He was also, perhaps, a little disappointed that he had not been afforded an opportunity of displaying his powers. He determined to create that opportunity. Calling a few of us to him, he led the way to a large wooden hive, overstocked with bees, and so having an immense cluster of the insects on the outside, immediately above the entrance, as if preparing to swarm. Quietly stepping up to the hive, he gathered up the bees in his bare hands, as if they were so many dead flies, and carried the living mass to us. The bees clung to his hands, working about in confused heaps, and only one inserted its sting. Langlois was pleased at this, and with great glee he desired us to notice how the little brown chap was vainly trying to withdraw the barbed lance. He then dropped the bees repeatedly from one hand to the other, and finally replaced them on the flight-board of their hive. Curiously enough, not one of these bees attempted to fly.

'At the conclusion of the experiments, Dr. Irving was heartily thanked for the gratification he had afforded, and he kindly undertook to repeat the exhibition on next Monday afternoon, at four o'clock. Steps will then be taken to form a Bee-keepers' Society, by means of which members may exchange experience and ideas, and be enable to perfect their knowledge of a subject of intense interest.'

From further reports it will be evident that a Bee-keepers' Association has been formed:

'The Apiarian Association.—At a meeting of the Committee of the Bee-keepers' Association held on Tuesday evening, it was decided that the standard size bar frames adopted by the Association, should be issued to members at 2*s.* per set of ten, and that the price to non-members should be 2*s.* 6*d.* The Committee was empowered to procure specimens of the cheapest hives that could be designed for use with the bar-frames, such hives to be complete with roof, &c. It was also resolved to grant members of the Association the use of a honey extractor, at a charge of 1*s.* per day; also, to prepare a list of flowering plants, which should, if possible, be grown by all apiarians. Various items of business were then disposed of, and some preliminary steps were taken in connexion with an illustrated bee lecture, to be given during the winter season.

'Bee Demonstration.—Dr. Irving gave a practical illustration of the process of transferring a swarm of bees from an old hive to one of the modern bar-frame structures. At three o'clock a considerable number of people had assembled in the public gardens, some of the country visitors having come from Timaru. The weather being favourable, Dr. Irving promptly decided upon adopting the driving process instead of using chloroform, in order that the demonstration might be of greater practical value to country visitors. The box hive, which had been kindly supplied by Mr. Armstrong, was a very heavy one, and the very large amount of young bees and brood comb well illustrated the generally observed results of the present season. In the driving process, the old hive had to be turned upside down, and an empty box inverted upon it. Then, by drumming upon the sides of the hive, the bees are frightened, and induced to leave the combs, and take refuge in the upper box. The presence of so many young bees, however, rendered the experiment only partially successful. The elder bees ascended quickly, but a large number of the younger ones clung tenaciously to the combs. This, notwithstanding, the transfer was successfully effected, and the sheets of heavily laden comb were duly transferred to bar-frames. At the same time, some of the combs were deprived of their contained honey by the use of the ingeniously simple Abbott slinger, and indeed every possible detail was demonstrated and carefully explained, the transfer being thus made a really valuable means of education in apiculture. All present seemed to be much pleased, and Dr. Irving certainly had the satisfaction of knowing that his efforts for the extension of bee-keeping had been fully appreciated.'

A lecture on 'The Honey Extractor' has also been delivered by Dr. Irving, an extract from which will be read with interest:—

'The extractor is undoubtedly the greatest invention of late years in aid of bee culture, as it enables the bee-keeper to double the honey produce of his bees. The bar-frame principle of hives brought the mysteries of the hive to light, gave facilities for management, and enabled the bee-master to help himself to their honey without destroying the bees, or materially injuring their home or prospects; but it does not enable the bees to store one ounce more than they could or would do in an old-fashioned slab or box-hive. The ingathering of honey depends entirely on the nature of the locality and the seasons, and is regulated mainly, as far as quantity per hive goes, by the strength (numerically) of the stock. Bees do not *make* honey, as some people think, any more than man can make fruit. They simply gather it when, by a happy combination of circumstances it has been secreted in the nectaries of flowers and blossoms, and having collected it, what they do not require for their own sustenance they store in their combs.

'As a matter of course, when it is explained that bees do not make honey, and that they can only collect it when naturally secreted; that, moreover, it is not secreted in cold weather, and that if it were the bees could not get abroad to gather it, this is the first lesson to be learned in bee culture. As a rule, the honey season is short in England, but it may be, and probably is, longer here; but whether long or short, stocks should be kept strong by cultivation, so as to be ready to take every advantage of a glut of honey. Stocks that are not strong cannot have much surplus honey, if any. That is lesson number two. Another lesson has also to be learned, and that is, as to the value of combs as built by the bees. It has been ascertained that for every pound of honey stored in new comb, a full pound has already been consumed in secreting the wax with which the new comb was built, or, in other words, every pound of comb-honey represents two pounds of honey as collected by the bees. Now, the extractor enables the bee-keeper to prevent the extraordinary loss that results from the bees having to build new comb in which to store their surplus honey; and where honey-getting is the object, the result will positively be doubled by its use. If two stocks of bees—similar in all respects—be set side by side, for every ten pounds of honey stored by one in new comb, twenty pounds at least could be obtained from the other by the aid of the extractor, and the latter would be stronger in bees, and therefore better able to stand the winter. Bearing these facts in mind, can anyone who wants honey for sale or for home consumption, doubt the expediency of using the extractor?

'When bees appear lazy and will not take to supers, it is often because the combs are full to repletion. The use of the extractor will relieve the combs, the queen will set to work, having room now to lay eggs; and all will go on again as it should do, and you will get a hive full of young bees with which to face the winter, instead of old and half worn-out bees, which gradually die out during the winter, and leave a very sparingly populated hive, to

begin the work of resuscitation in the early spring. I am quite well aware that some apiarians urge, that comb foundation so largely aids the bees in forming new comb, that the waste is not nearly so great as formerly. True, but the extractor, too, does away with the expense of both comb foundation in supers and the supers themselves, and where honey is simply the object sought, its value is self-apparent.'

WIRED FOUNDATION.

Mr. James Heddon, in an article in the *American Bee Journal*, p. 424, writes enthusiastically in favour of the 'Given' wired-foundation, and prefers it to the Dunham or any other, he says:—

'I do not want to *keep* "foundation" in its place. I only want to put it in its proper position when the swarm is put in, and then know that it will keep *itself* there for ever.' He further says, 'I was forcibly reminded how much behind our British cousins are when I read Mr. Cheshire's article on p. 372, containing statement after statement that is the exact reverse of the experience of many of our leading apiarists in this country. He talks of pulling out the wires—I would not have the wires withdrawn from my combs at 50 cents per hive. I know that a No. 36 tinned wire sunk level with the surface of the septum will cause no trouble whatever to bees or keeper.'

[When doctors differ, who shall decide?—Ed.]

COMB-FOUNDATION MADE ON WOOD.

Mr. C. F. Echard, Woodside, L. I., N. York, claims to have invented foundation on wood long since, and says he has had in it use for two years; 'but on the whole did not make much noise about it, as he intended taking out a patent on it as soon as he had thoroughly tested it. This was now done, and he was just about to apply for a patent when he was startled by seeing Mr. Jones's letter about Mr. Abbott's wooden-foundation.'

We are naturally sorry if our efforts have forestalled the chance of a patent on this article in the land of patents, because, had that insurance on brain effort been effected, the world would have heard 'considerable' noise about the advantages which it possesses over the sagging, bending, stretching and breaking stuff about which the American patentees of ordinary foundation are squabbling eternally. It is unfortunate, too, in other respects, that the only foundation that will not break, and in which new swarms may be sent hundreds of miles in safety, was not perfected by an American instead of an Englishman; had it been, it would long ere this have been applauded to the echo, and proclaimed a triumph of art, and everybody would have been craving for it, and, at least, it would have led to extensive experiences. As it is, it has been tried as a curiosity simply; and of it Mr. T. G. Newman, Editor of the *American B. J.*, writes:—

'About the 6th July Mr. D. A. Jones sent us a sheet of Abbott's foundation made on a wooden base. The board is about $\frac{1}{16}$ of an inch thick: this is coated on both sides with wax, then placed between plates which are put in the press, and a flat-bottomed impression made in the wax. This waxed board was tacked in a frame, and placed in the brood chamber of a strong colony. The bees took to it speedily, and at this time every cell is built out and occupied with brood or honey.'

In a summary of his opinions, in which he avers the 'Dunham' foundation to be the best, he writes:—

'Bees will readily accept foundation with a wooden base, but for ordinary use in the apiary, unless much cheaper in price, it will not be preferred.'

Perhaps it is only natural for every one to believe in the wares in which he has an interest—every crow thinks his own offspring swans, at least so runs the fable.

BEE-KEEPING IN ENGLAND IN 1880.

By the Rev. H. R. Peel, Hon. Secretary of the British Bee-keepers' Association.

Being a Lecture delivered on September 8th, at the Assembly Rooms, Boston.

'Those of you who are familiar with the writings of the late Mr. Charles Dickens, and especially with the *Pickwick Papers*, will remember a garden-party which was given by Mrs. Leo Hunter to her friends and acquaintances at Batanswill. Mr. Samuel Pickwick was introduced on this occasion to Count Smorltork, a distinguished foreigner, who was writing a book on England which was to embrace "music, picture, science, poetry, poltic, all tings." "The word *politics*," said Mr. Pickwick, "comprises in itself a difficult study of no inconsiderable magnitude." The same may be said of Bee-keeping. It is a study which presents many difficulties, all of which, however, may be overcome by energy and perseverance, and it is a study of no inconsiderable magnitude. Indeed, the great charm of bee-keeping is that so many persons can take an interest in it from different reasons and motives—that there are so many points of view from which it may be regarded. A scientific mind may look upon it as a science; a practical mind may regard it as an art; the gardener may take an interest in bee-keeping from its bearings upon horticulture, and the farmer from its connexion with agriculture; whilst the philanthropist may take up bee-keeping and feel an interest in it because he can discern in it a means of improving both the temporal and the spiritual condition of his fellow-creatures. I must inform you that I belong to the latter category, and do not pretend to being either a scientific or a practical bee-keeper. As Secretary of the British Bee-keepers' Association, I see and hear a good deal about bee-keepers and bees; and from being obliged to take a general view of the matter, instead of looking at it from one point exclusively, I can perhaps tell you as well as any one else what is the present position and what are the future prospects of bee-keeping in the year 1880.

'1. We will look upon bee-keeping first as a science. What constitutes a science? The science of Astronomy, for instance—what is that? Is it not the knowledge of the heavenly bodies which has been gained, not by guesswork or speculation, but by observation and experiment? There have been many writers upon bees, notably Virgil, and our own great dramatist Shakespeare, whom we may read with the greatest possible pleasure and admiration, but whom we cannot call scientific bee-keepers. Virgil seems to have collected all the legends about bees which he could learn from the peasants of Mantua or Calabria, and to have made them into a poem. But Virgil would be a poor guide for any Lincolnshire bee-

keeper to follow. One who had lost his bees, for instance, would hardly do well to sacrifice a young bull under two years old at the beginning of winter in the belief that bees would be hatched out of his buried carcase in the spring. Aristotle, on the other hand, who lived long before Virgil, was a scientific inquirer into bee life, and laid the foundation of scientific bee-keeping. He knew more about bees three hundred years before the birth of Christ than some Cornish bee-keepers do in the present day. He would have repudiated their belief that "the drones be they as lay the eggs, and that the little ones as work be the he-bees," and would have contended that the queen has something more to do in a hive than to be "a kind of a governor like among 'em." I doubt whether Aristotle would have quite seen the necessity for putting two pilchards into a hive when he took a swarm of bees. But just as astronomical observations could not be carried on with much success before the introduction of telescopes and observatories, so the science of bee-keeping could make but little way until Maraldi invented the first Observatory Hive at the beginning of the last century, and the microscope began to be used in anatomical studies. I could mention a long list of the names of those who advanced the science of bee-keeping by their own individual researches: but the greatest advance which has been made in England was the formation of the British Bee-keepers' Association in the year 1874, when these individual efforts were all brought together and concentrated upon one common object. You may rely upon it that the English bee-keepers of generations yet to come will feel that they owe a greater debt to the founder of that Association than they do to Aristotle or any other individual inquirers. The Exhibitions which have been held by the British Bee-keepers' Association have brought together all the appliances and inventions which could throw light upon the anatomy and habits of the bee, and reveal all the mysteries of the bee-hive. These diagrams which I have brought with me are an outcome from those Exhibitions. The originals from which these two sheets are taken were generally considered to be of such merit that an application was made last year to the Science and Art Department of the Committee of Council on Education, with a view to their being recommended by the Department to the many schools throughout the country which are connected with it. This was a step towards the recognition of bee-keeping as a science; but one of the members of our Committee (the Rev. E. Bartrum) was not satisfied with this. He had been an eye-witness of the good done by the Schools of Cookery established in so many towns through the teaching of Mr. Buckmaster, and he thought a more thorough knowledge of bee-keeping might be diffused through England if the Government would endow a Professorship of Bee-keeping, and form a School of Bee-keeping at South Kensington. Mr. Bartrum was not unmindful of the assistance given from the public funds in Germany to the many Bee Societies established in that country, where every schoolmaster is obliged to hold a certificate that he has a competent knowledge of bee-keeping. In accordance with Mr. Bartrum's suggestion, a letter was this year addressed to Earl Spencer as President of the Educational Council, begging him to take the subject under his consideration. His reply was most prompt and encouraging, and he evinced his personal appreciation of the grounds for the request by visiting the Exhibition of 1880 in the gardens of the Royal Horticultural Society, and witnessing the manipulations which were being carried on in the Bee Tent. On the day following Earl Spencer's visit the Exhibition was inspected by Professors Huxley and Norman Lockyer, who both seemed pleased and interested by what they saw and heard. Since then I have been asked by Colonel Donnelly to nominate some gentleman who would give two lectures on bee-keeping to certain students who were qualifying themselves for becoming teachers of agricultural science; and have also received another communication from the Science and Art Department suggesting that two collections of the best hives and appliances used in bee-keeping should be formed at the Museum at South Kensington and at the Branch Museum at Bethnal Green. Mr. Frank Cheshire delivered the two lectures to the future teachers of agricultural science to the satisfaction of all who heard him. The collections for the two Museums are in the process of formation. On the whole, I think that the position of bee-culture as a recognised branch of natural science in 1880 is more hopeful and encouraging than it has been in any previous year.

"2. I must now say a few words upon bee-keeping regarded as an art, and as I defined a science as knowledge obtained by observation and experiment, so I think I may define an art as such knowledge applied to practice. Mr. Squeers' method of teaching his philosophical class was right in theory: he went upon the practical mode of teaching. When a boy knew that "winder" spelt "window," he went and cleaned the window of the back parlour. When a boy knew that "bot-tin-ney" meant a knowledge of plants, he was set to weed the garden. An art, however, may be practised without the science having been first mastered. Many a man practises the art of photography without understanding the science of it, and it is the same with bee-keeping. The art is often practised without regard to the science. The art of bee-keeping consists in obtaining as much honey from your hives as possible in the most attractive and, I think we may add, in the most portable form. This art has had many phases. I received a letter last year from an English officer in the Himalaya Mountains, asking for assistance in teaching the natives to domesticate their bees. The art of bee-keeping, as practised in that part of the world, he described as being very primitive. The native thrusts a long-necked bottle through the mud wall of his house, with the mouth outwards, and trusts to the chance of a swarm of bees coming to occupy the bottle. Should the bees make this their home, the proprietor of the bottle in due time suffocates the bees, breaks the bottle, and takes the honey. In Egypt the hive consists of a clay pipe, like a draining-tile. The early Britons seem to have practised the art of bee-keeping in an equally primitive but less economical method. They marked the hollow trees which swarms of bees had chosen for their homes, and, when the time came for honey-gathering, cut down the tree and took the honey. I suppose that the Romans must have introduced the well-known skep into Britain, for Virgil speaks of hives "constructed from the limber osier" as being common in his day. The coldness of our climate probably caused the "limber osier" to be superseded by straw, and when the dome-shape was introduced—with the object, I suppose, of giving the bees greater facility in fixing their combs—there was the straw skep complete. Under the straw skep the bees abode in peace for many generations, enjoying, however, mostly but a yearly tenancy, as the greater number were suffocated in the autumn. The good which the straw skep effected was in getting bees domesticated at all. Once in the skep, the bees were (except in the case of very skilful bee-masters) completely emancipated from the control of their owners. The skep was to them what the shell is to the tortoise, or, according to Sidney Smith, the dome of St. Paul's is to its Dean and Chapter. It was an immense advance in the art of bee-keeping when the "moveable comb hive" was invented almost simultaneously by Dzierzon and Langstroth. To sum up briefly the great advantages which the hive with moveable frames and combs possesses over the straw skep, we may say that it is—1. An observatory hive, as you can at any time take out and examine the combs and bees. 2. It admits of the use of comb foundation, with the aid of which a hive has been known to be filled with combs

within the space of three days. 3. It allows the use of the extractor, through which the large quantity of liquid honey now seen at our shows is so easily obtained, whilst room is given to the queen for the deposition of her eggs as occasion may require. 4. It affords great facilities for the storing of honey in supers, both on the top of the frames and also in what are illogically known as "side" supers. 5. It makes the process of artificial swarming a much more simple and feasible one. It must not be thought, however, that Art has done nothing for the adherent of the straw skep in these latter days. It has taught him how to make his bees docile and harmless by means of a little piece of smoking-rag or fusti n. It has taught him how to drive his bees from one hive to another, and how to transfer his combs from a skep to a frame-hive, if he be so minded. It has taught him the value of feeding his bees in autumn and in spring, so as to encourage both late and early breeding in the hive. It has made him acquainted with an admirable substitute for pollen, when that most necessary component of bee-food is not obtainable in the shape of pea-flour. It has fortified the hearts of the timid by protecting them with veils, gloves, and bee-dresses, and soothed the agony of the wounded by the application of bee-lotions. The *British Bee Journal* (which I recommend you all to take in) is continually announcing some new advance which has been made in the art of bee-keeping, and fresh inventions and appliances appear annually at the Exhibition of the British Bee-keepers' Association. Bee-keeping should be a combination of science and art, and as such it has been recognised by the Science and Art Department of the Council on Education. I hope that the collections of hives and bee appliances which are being formed for the Museums of South Kensington and Bethnal Green may require frequent additions to be made to them, and that the specimens which we now think to be the perfection of an art may soon have to give place to more perfect and more serviceable inventions.

'3. Hives, as a rule, are placed in gardens, and the gardener is very often put in charge of his master's bees, and is supposed to know all about them. The gardener, however, seldom knows how much he is indebted to the bees; and, indeed, the relations of bees to horticulture are only beginning to be unfolded. I have just been speaking of pollen as a component part of bee food. This is not, however, the only use of pollen. Without being much of a botanist, any one may know that amongst plants some are called male plants and some female. The male produces the pollen, the female receives it. The male plant is provided with a stamen terminating in an anther, which holds the pollen. The female is provided with a pistil, terminating in a stigma, which detains the pollen. Some plants contain both these organs—both the stamen and the pistil—as you see in Mr. Cheshire's diagrams. Now the pollen must be brought from the male to the female plant, or from the male to the female organ. Sometimes the wind does this: but it does it very imperfectly. The other alternative is the agency of insects, and amongst these bees play the principal part. The flower produces the honey in its nectary, and attracts the bee to it by its bright and varied colours. The bee visits the flower, and carries off the pollen on its tongue or on its back from the anther of the stamen and lets it fall on the stigma. Then a thread is spun from the pollen, falls from the stigma down to the ovary, and generates the seed. But there is something more to be said. You may think, if a plant possesses both stamen and pistil, both the male and female organ, that the transfer of the pollen is a very simple matter. Not so: it becomes more difficult. A plant to be strong and vigorous must not be self-fertilised. Nature abhors self-fertilisation, as much as she abhors a vacuum. Any breeder of live-stock, or any poultry breeder, will confirm this. You must introduce fresh blood from time to time, either on the male or the female side, or your stock will degenerate. There are villages in Switzerland where from intermarriages the inhabitants are mostly 'cretins.' A man may not marry his grandmother, and it is often said that he would be a fool if he did; but whether this were the case or no, it would not be unlikely that his son would be a fool. Mr. Cheshire in these diagrams has shown you some of the devices which plants adopt to escape self-fertilisation. Here the pistil keeps herself in the background until the anthers have withered and died down; there the anthers are in retirement until the pistil has been fertilised from the anthers of some other flower. Every gardener (as well as every bee-keeper) ought to have a set of these diagrams in his house to teach him how much he owes to the bees. Many gardeners I know have lost no time in purchasing them; and many who have kept bees hitherto, not for getting honey, but the setting, *i.e.* the seeding of their peaches, have told me that they have been perfectly amazed at the revelation of the intimate connexion between the flower and the bee. The bee-keeper and the gardener are in fact becoming intimate friends. The bee-keeper is led to study the nature and organization of plants, and the gardener is led to take an interest in the nature and habits of the bee. The outward and visible sign of this friendship is the cordial welcome given annually to the British Bee-keepers' Association by the Royal Horticultural Society in their Gardens at South Kensington, and the eagerness displayed by secretaries of horticultural and cottage garden societies to secure the attendance of the Bee Tent as an additional attraction to their exhibition. One of the principal gardeners in your county of Lincolnshire invited the members of the Bee-keepers' Association this year to visit the grounds of Belvoir Castle, that they might learn for themselves what flowers offer the earliest pasture to the bee in the spring-time of the year. And at the Show held lately by the Hertfordshire Bee-keepers' Association, a county flower-show was held at St. Albans for the first time, at which some of the best gardeners in the kingdom gave their services as judges gratuitously as a mark of their good-will towards the bee-keepers. I should mention also that the Royal Horticultural Society, with their habitual kindness, lent the Hertford Bee-keepers two of their largest tents for the occasion.

'4. It may seem more difficult to establish a connexion between bee-keeping and agriculture, and when the British Bee-keepers' Association hoisted their flag last year at the show of the Royal Agricultural Society of England, many people asked what on earth bee-keeping had to do with agriculture? But I think that we can easily establish a connexion between them. Just as the gardener depends upon the bee for the fertilisation of his plants, so does the farmer depend upon the bee, though he may not know it, for the fertilisation of many of the crops on which the live stock is fed. At one of our meetings in the early part of the year, the Rev. George Raynor informed us that in Essex generally the white clover crop had been a failure last year, but that in his own neighbourhood, where a great number of bees are kept, the crop had been very abundant. The Rev. William Cotton introduced bees into New Zealand with the express object of encouraging the growth of clover, which would not seed for want of its natural fertilisers. That which does good to his horses and to his live stock, should be a matter of interest to the farmer; and if anyone could keep bees under favourable conditions, a farmer ought certainly to be able to do so. The advice given generally to a farmer in these days—and he gets plenty of advice just now—is that he must not think of competing with America in growing wheat, but turn his attention more to the breeding of live stock, and the sale of eggs and poultry. He must no longer despise what are known as the *minor* industries, and of these the production of honey is one. There is one point of sympathy between the farmer and the bee-keeper which must tend

to bring them together in a companionship of either rejoicing or mourning, and this is as regards the weather. The fine summer weather which rejoices the heart of the farmer, produces a corresponding impression upon that of the bee-keeper; whilst the continual downpour—such as that which last year converted the soil of Kilburn into an ocean of mud—produces an equal depression upon the mental barometer of the farmer and the bee-keeper. The farmers are indeed rather courting the bee-keepers just now. The Royal Agricultural Society of England was so much pleased with our efforts at Kilburn, that a sum of 20*l.* was offered to us to defray the expenses of sending one of our bee-tents to the Show held this year at Carlisle. But the Royal Agricultural Society did more than this to connect bee-keeping with agriculture, when they decided that if hives and bee appliances were exhibited, they should be ranked in the category of Agricultural Implements, and thereby subjected to a lesser scale of fees for the space occupied. The dairy farmers, too, have begun to revive the old associations between milk and honey, and bees and their produce will be found amongst the other exhibits this year at the Show held by the British Dairy Farmers' Association, in the Agricultural Hall at Islington. In the tour which was made through Ireland this year by Messrs. Abbott and Carr, the first appearance which they made with the Bee-Tent was at the Show of the Royal Agricultural Society of Ireland at Clonmel. Now, ladies and gentlemen, if we are invited by Agri ultural Societies to attend their shows; if hives and bee appliances are regarded as agricultural implements; if bee-masters are invited to give lectures on bee-keeping to teachers of agricultural science, who shall say that there is no connexion between bee-keeping and agriculture?

'5. I might have added another reason why a farmer should take an interest in bee-keeping even if he does not keep bees himself. If he should have a warm corner in his heart for the bees because they fertilise the crops which feed his sheep and cattle, he should surely have a good word for them also, if they benefit the labourer who tends his stock. Every farmer would, I should think, sooner have labourers in his employ who p y their rent regularly, whose cottages are neat and tidy, and whose wives and children are well fed and clothed. And what an assistance to the labourer in these respects may he the keeping of a few hives of bees! He cannot well keep fowls or goats unless he lives on a common; but, at least, if he has a garden, and any regard for it, fowls must be shut up and goats tethered, but there need be no restraint on his bees. If he can offer them no pasture in his own garden, they will find it in the gardens of other people.

'It has been asked how much profit a labouring man can make out of his bees? My answer would be that it depends entirely upon himself,—upon his own intelligence, industry, and perseverance. I could name several cottagers who make a large profit out of their hives. One was presented to Earl Spencer at South Kensington, who I think convinced his lordship that there was a profit to be made out of bee-keeping if a man was only willing to serve an apprenticeship to it. No one can expect to make a large profit out of any trade or occupation the first year or two that he embarks in it. But labourers are not the stupid Bœotian race which they were before the schoolmaster went abroad, and I have no fear but that the English peasant will soon rival the bee-keepers of Germany and America, and make that 3*l.* out of each hive which has been fixed as the mark at which he ought to aim.

'There is one more aspect in which bee-keeping may be regarded, and for the sake of which many are found to take an interest in it. What he shall eat, what he shall drink, and wherewithal he shall be clothed, is not the one engrossing thought of the labourer's mind. He is as susceptible of religious impressions as any other member of the community. Paley, in his book on *Natural Theology*, has imagined a savage finding a watch and examining its construction, and then being irresistibly led to the conclusion that the watch must have had a maker, and a maker endowed with great skill and intelligence. Shall the English peasant be more dense and stupid than the savage? Shall he have all the wonders of bee-life unfolded to him? Shall he learn how the flower is adapted to the bee and the bee to the flower, and then fail to rise in thought to some appreciation of the goodness and the wisdom of Him who designed all this? If he does, let a heathen teach him a lesson? Dryden has translated the writings of Virgil so faithfully, that the utterances of that poet are within the compass of every English reader. What did he say about bees?

'"Induced by such examples, some have taught
That bees have portions of ethereal thought,
Endowed with particles of heavenly fires,
For God the whole created mass inspires.
O'er heaven and earth and ocean's depths He throws
His influence round, and kindles as He goes;
Hence flocks and herds, and men and beasts and fowls,
With life are quickened, and attract their souls;
Hence take the form His prescience did ordain,
And into Him at last return again."

'These thoughts had been anticipated long before, and they are but the echo of the confession which we find in perhaps the oldest of all the books of the Bible.

'"Who knoweth not that the hand of the Lord is in all this,

'"In whom is the breath of every living thing, and the life of all mankind?"'

BRITISH DAIRY-FARMERS' ASSOCIATION.

The Exhibition of Hives and Honey promoted by the British Bee-keepers' Association, in connexion with the Dairy Show at the Agricultural Hall, Islington, was opened on Tuesday, the 26th ult., and created, apparently, as much interest amongst visitors as the exhibitions of cattle, goats, and poultry, if we may judge from the crowds besieging the various stands on each day of the show,—extending over four days,—despite the unfavourable weather. The exhibits commenced with Class 93, for observatory hives, in which we noticed three entries only, each obtaining a prize, that of Mr. Abbott being placed first. This hive, substantially and neatly constructed of polished mahogany and plate-glass, offers great facility for wintering the bees, the combs remaining in the same position as in an ordinary bar-frame hive, but, by a simple contrivance, being easily separated and examined on both sides. The four sides and top of the hive are of plate-glass of the finest quality, thus allowing a full view of the whole interior of the hive, at the same time admitting of free ventilation, and, by means of a quilted cover, sufficient warmth during the winter months.

In Class 94, for the best moveable comb-hive for general use, price not to exceed 15*s.*, the first prize was taken by Mr. Blake with a hive which seemed to strike everyone as a model of cheapness and simplicity, with stand and cover complete, and of most substantial workmanship, build, and material. Mr. Baldwin, the well-known expert of the Association, obtained second place in this class with a neat hive of simple construction, and Mr. Abbott third. In Class 95, Mr. Blake's hive, first prize, priced at 6*s.* 6*d.* only, was all that could be desired.

The honey classes were a great success, and we have no hesitation in pronouncing this as *the* show of the season. Want of space forbids a full report of this department of the show; suffice it to say, that the commended, and some of the unnoticed, exhibits were of

quality and magnitude sufficient to have gained the highest honours at any show at which we have hitherto been present.

Amongst the winners of prizes in this department we noticed the well-known names of Messrs. Cowan, Thorne, Rusbridge, Neighbour, Scott, &c., and we were particularly struck by the fineness of quality and delightful aroma of the greater part of the honey exhibited, both comb and extracted. These remarks apply particularly to Mr. Rusbridge's samples of hawthorn and clover extracted honey and the other prize exhibits. The super of 61½ lbs. exhibited by this gentleman, which deservedly obtained the first prize in Class 99, was the finest thing of the kind ever brought under our notice, the evenness, uniformity, solidity, and quality leaving nothing to be desired.

Class 100.—For the largest and best exhibition of run or extracted honey, was simply a superb class, and we cannot refrain from a short notice of one exhibit to which the judges awarded an 'extra 3rd prize,' viz. that of Mrs. Spencer, of Renhold Vicarage, Bedford. This consisted of three cases, each containing thirty 1 lb. glass jars of fine extracted honey—in all 90 lbs. It is to the construction of the cases we wish to call attention, and to the reasonable price of each—7*s.* 6*d.* Each case consisted of three shelves, into which the jars were fitted—ten upon each,—with a sliding bar of iron in front keeping the jars in their places, over which a kind of shutter, on hinges, closed and locked, rendering all compact and safe for travelling—a great desideratum in these days of hurried railway rushing and speed, when, if not securely packed, so fragile an article as honey runs great risk of breakage.

The judges, who had no easy task to perform, and who devoted much time and patience to making their awards, were—the Revs. George Raynor and J. L. Sisson, and Mr. Willard, head-gardener to the Baroness Burdett-Coutts. That their awards should have given full satisfaction to all exhibitors, is more than could have been expected, especially in some of the classes where the competition was unusually severe. This desirable achievement, we fear, will not be attained until the millennium of judges arrives. On the whole, however, we heard of few complaints.

In conclusion, we heartily congratulate the Association on the success of its show, and more especially on the immense strides effected in bee-culture during the six short years of its existence.

We append the list of prizes:—

Bee Hives.—For the best Observatory Hive, stocked with Bees and their Queen.—1, J. A. Abbott. 2, Neighbour and Son. 3, C. N. Abbott. For the best Moveable Comb Hive for general use. Prices not to exceed 15*s.*—1, A. Blake. 2, S. J. Baldwin. 3, C. N. Abbott. For the best Moveable Comb Hive for Cottagers' use. Price not to exceed 10*s.*—1, A. Blake. 2, C. N. Abbott. 3, S. J. Baldwin.

Honey.—For the best display of Comb Honey in sections, exceeding 12 in number, each section not more than 3 lbs. in weight.—1, J. T. Thorne. 2, T. W. Cowan. 3, Neighbour and Son. Extra 3, W. E. Warren. For the best 12 sections of Comb Honey, each section not more than 3 lbs. in weight.—1, T. W. Cowan. 2, A. Rusbridge. 3, J. T. Thorne. vhc, S. Thorne. For the best 6 sections of Comb Honey, each section of not more than 3 lbs. in weight.—1, T. W. Cowan. 2, C. N. Brooks. 3, S. Thorne. Extra 3, J. T. Thorne. For the best exhibition of Comb Honey in one or more supers, of any material, Sectional Supers excluded. 1, A. Rusbridge. 2, T. W. Cowan. 3, Neighbour and Son. For the largest and best exhibition of Run or Extracted Honey in glass jars or bottles, each entry to consist of not less than 20 lbs.—1, A. Rusbridge. 2, R. Scott. 3, Mrs. R. Spencer, vhc, C. N. Brooks. For the best exhibition of Run or Extracted Honey in small glass jars, not to exceed 2 lbs. each, each entry to consist of not less than 10 jars.—1, R. Scott. 2, A. Rusbridge. 2, F. M. Smith.

Beeswax.—For the largest and best display of Pure Beeswax, in bars or cakes, from 1 to 3 lbs. each.—1, C. N. Abbott. 2. W. Hunt. 3, R. Scott.

On Wednesday evening a Conversazione of the Association was held, at which a paper was read by the Rev. E. Bartrum, M.A., Head-Master of Berkhampstead School, on 'The Stewarton Hive.' This paper, and the discussion thereon, we reserve to the December number.—*Communicated.*

BRITISH BEE-KEEPERS' ASSOCIATION.

The usual monthly meeting of the Committee was held at 105 Jermyn Street, on Wednesday, October 16th. Present, Rev. E. Bartrum (in the chair). Mr. J. M. Hooker, W. O'B. Glennie (Treasurer), and Rev. H. R. Peel (Hon. Sec.). The minutes of the last meeting having been read and confirmed, the Secretary reported that in accordance with the resolution passed at the last Committee meeting, a circular had been sent to all those members who were in arrears with their subscriptions; and that Mr. Cheshire and himself had visited the South Kensington Museum, and made the requisite arrangements for the exhibition of hives and other appliances in accordance with the request received from the Education Department. It was resolved that copies of the Diagrams should be sent to all the leading London papers for criticism on an early date.

The balance sheet for the month ending Sept. 30th was read, showing a balance in hand of upwards of 20*l.*

The account of receipts and expenses relating to the Irish tour was presented, showing a deficiency of 45*l.* 6*s.* 8½*d.* The Secretary announced that he had received a donation of 25*l.* from the President of the Association on account of this deficiency, and that he himself would give a donation of 20*l.* for the same object.

The Quarterly Meeting of the Committee for conferring with the Representatives of County Bee-keepers' Associations was held in the Board Room of the National Chamber of Trade, 446 Strand at 4 p.m. on Wednesday, October 27th. Present, Mr. T. W. Cowan (in the chair), Rev. George Raynor, Rev. E. Bartrum, Mr. F. Cheshire, Rev. H. R. Peel, Hon. Sec. There were also present as representatives of County Associations: Mr. W. H. Dunman, Dorsetshire; Mr. Jesse Garratt and Mr. George Allen, West Kent; Captain Campbell and Mr. F. Lemare, Surrey; Rev. W. Stuart Walford, and Rev. R. A. White, Suffolk.

Mr. W. H. Dunman suggested, 'That a tent in which exhibits might be displayed should be provided by the Central or British Association, and lent out to County Associations on terms to be hereafter decided, independently of the Bee Tent.'

Moved by the Hon. Sec., and seconded by Rev. E. Bartrum, 'That this suggestion be referred to the Committee of the British Bee-keepers' Association.'

Mr. W. H. Dunman also suggested, 'That lecturers be provided by the Central Association, and sent down to the counties, the Central Association being responsible for all expenses, and taking all the proceeds.'

Moved by the Rev. E. Bartrum, and seconded by Rev. G. Raynor, 'That this suggestion be also referred to the Central Committee.'

Moved by the Hon. Sec., and seconded by the Rev. E. Bartrum, 'That the Reports and Balance Sheets of the County Associations should be transmitted to the Secretary of the Central Association, not later than the first day of February in each year.'

This resolution was carried by the unanimous vote of all the representatives of County Associations present. It being explained that the intention was to induce the

County Associations to hold their Annual General Meetings in the month of January, so as to prevent any delay in the holding of the General Meeting of the British Bee-keepers' Association, which should take place in the month of February.

Moved by Mr. T. W. Cowan, and seconded by the Rev. E. Bartrum, 'That the conditions of affiliation, as thus amended be now adopted, and that printed copies of the same be forwarded to the Secretary of each affiliated County Association.' Carried unanimously.

The Honorary Secretary reminded the Secretaries of the County Associations present, that according to the conditions now passed, he must request them to furnish him with the names of the winners of the silver and bronze medals, and also of the certificates awarded by the British Bee-keepers' Association at the County Shows of 1880.

The Secretaries of the Dorsetshire, West Kent, and Suffolk Associations, complied immediately with the request.

Moved by Mr. F. Cheshire, and seconded by the Rev. G. Raynor, 'That *Modern Bee-keeping, a Hand-book for Cottagers*, be placed in the hands of some publisher, to be selected by the Committee, with a view to its general distribution in the book trade.'

Moved by the Rev. E. Bartrum, and seconded by Mr. T. W. Cowan, 'That the Hon. Sec. be requested to communicate with the President of the Education Department, and ascertain whether he is willing to receive a Deputation from the British Bee-keepers' Association, respecting the appointment of a Professor of Bee Culture.'

WARWICKSHIRE BEE-KEEPERS' ASSOCIATION.

This Society held its first Exhibition of Honey, Hives, and Bees, in connexion with the Warwickshire Agricultural Society at Leamington last month. The Association has purchased its own Tent for manipulations, and this was the chief attraction of the Show, visitors swarming into the Tent to see and learn from Messrs. Baldwin and Walton, the manipulators, the art of bee-culture. Very great interest was taken, and many questions asked and answered, several ladies even venturing inside the gauze for a handful of bees. The manipulations were accompanied by lectures; and much surprise evinced upon hearing the wonders of the honey extractor, which was illustrated.

A most creditable display of honey, hives, bees, and bee-furniture, was exhibited in a separate tent, which also caused much interest, the tent being full all day with visitors. The Hon. and Rev. C. J. Feilding (Salop) and Mr. Shufflebotham (Coventry) very kindly acted as judges, and their judgments gave every satisfaction. We learn from all parts of Warwickshire that bee-culture is making great progress, many cottagers who have been known for years past to burn their bees now drive and unite them.

CALEDONIAN APIARIAN AND ENTOMOLOGICAL SOCIETY.

Report of closing meeting of Seventh Session, held 13th October, 1880. Present—Rev. John Irvine (Innellan). Messrs. Sword, Bennett, Wilkie, Johnstone, Kinloch, Garvie, Wood, Baillie, Laughland, Ellis, Sinclair, and Hutcheson.

The Minutes of last meeting were read and approved of. Letters of apology were read from Messrs. Paterson (Struan), Raitt (Blairgowrie), A. Cameron (Blair Athole), Thomson (Blantyre), Thomson (Dalbeattie), and Anderson (Dalry).

The Rev. J. Irvine, of Innellan, presided. The Treasurer's statement was read and approved. It was stated that the Kelso Show had resulted in a deficit of 41*l.* 15*s.* 6*d.* The Treasurer had communicated with Mr. Menzies, of the Highland and Agricultural Society, in regard to the adverse balance, and read reply from him. In the discussion that ensued on the Kelso Show, it was suggested there should be in future a check bar at the entrance. The Secretary was instructed to draw up and forward to the patrons and members of the Society a statement of the funds, and requesting them to liquidate the debt. A letter was then read from Mr. Raitt, the Secretary of the East of Scotland Bee-keepers' Association, suggesting that the Society be re-constituted on a national footing, affiliating all local societies. Numerous letters were read from various members on the same subject. A long discussion ensued, after which, on the motion of Mr. Wilkie, it was resolved to instruct the Secretary to forward to the secretaries of the various societies in Scotland copies of the new rules anent affiliation, and otherwise correspond with them on the matter. The proposal for a Honey Fair, to be held in Glasgow in September yearly, was remitted to the Committee to be brought up at the meeting in March. On the motion of Mr. Sword a vote of thanks was passed to the Chairman.

The Rev. Mr. Irvine kindly agreed to give a lecture on Bee-culture in Stirling next March to forward the science and otherwise interest county proprietors and bee-keepers in our next Show, which takes place in connexion with the Highland and Agricultural Society's Show in July, 1881.

DORSET BEE-KEEPERS' ASSOCIATION.

A meeting of the committee and friends of this Association was held in the Alington Hall, Dorchester, on Monday, Oct. 11th. Amongst those present were: Rev. H. Everett, Rev. J. Stanton, E. Burnett, Esq., T. Coombs, Esq., Messrs. W. H. Dunman, jun. (honorary secretary), Stickland, and Vatcher. Mr. Dunman was appointed to represent the Association at the forthcoming meeting of the British Bee-keepers' Association in London for the discussion of rules relating to county associations. It was also decided to arrange for a series of lectures to be delivered in various towns and villages throughout the county during the coming winter, and to secure sets of mounted diagrams and other things required for such occasions. During the proceedings a letter was read from a member who was unable to be present, and it contained the following hints:

'The question of funds is sure to crop up. Well, most of us can get an additional subscriber or two. Let us try. We can all help in some way. One can give, another can beg; some can work, and others can talk. Our secretary has the real work to do, and ought to be relieved of all anxiety about money. I shall be pleased to double my subscription next year, and perhaps others will follow the example. Moreover, if the other members of the committee will do the same, I will undertake to get new subscribers to the value of 1*l.* within a given time, or pay the money. This would enable us to go into the lecture season with spirit; and there is very little doubt about the result, for the committee-men who attend the lectures should make a point of canvassing for new subscribers on each occasion. All dummies should be got rid of forthwith. Strike off all unpaying members. Retain no one on the committee who does not help in some way: either by subscriptions or donations, lectures or other forms of advocacy, attendance at committee meetings, giving active assistance at, or sending exhibits to, the country or local shows. *We must all do something* if the Association is to be a success.'

SCIENCE SCHOOLS AND BEE-KEEPING.

We are informed by a correspondent in the *Western Gazette* 'that the memorial presented to Earl Spencer by the British Bee-keepers' Association has not been without

some effect, although, at present, a professor of bee-keeping has not been appointed in connexion with the Science and Art Department. A few days ago it was announced by Professor Tanner to the science teachers who are now attending his lectures that an extra day would be added to the course for the purpose of enabling those teachers who wished to attend two special lectures from Mr. F. Cheshire on bee-keeping. It was considered that it was advisable the daughters, as well as the sons, of the farmers and others interested in agriculture, should have instruction in agricultural matters from the teachers now preparing themselves for the purpose; and for this reason bee-keeping, and also every matter connected with the dairy, should have full attention. One lesson learnt was, certainly, that, unless British dairy farmers, as well as bee-keepers, study their occupations a little more closely, they will be left behind in the race by their cousins across the Atlantic.'

PARIS UNIVERSAL EXHIBITION, 1878.

Official Report of Her Majesty's Commissioners on

'Class 83.—Useful Insects and Noxious Insects.

'Bees, Silkworms, and other varieties of the Bombyx tribe—Cochineal Insects—Apparatus used in the Culture of Bees and Silkworms—Apparatus and Processes used for the Destruction of Noxious Insects.'

'Very little has been done in Great Britain with respect to the introduction and propagation of useful insects. Attempts have been made, from time to time, to promote the rearing of silkworms in this country, but no considerable progress has been made in this direction, our climate not being favourable. The Alianthus worm and the Japanese-oak silkmoth have been raised, but more as experiments and for amusements than as profitable industries. Bee-keeping is practised in many quarters of the kingdom, but not on an extensive or systematic scale in any locality. We import honey yearly to the value of from 10,000*l.* to 25,000*l.* A British Bee-keepers' Association was formed in 1874, which held an exhibition of hives, bees, and their produce, at the Crystal Palace, in the close of that year; but neither this nor the formation of a Silk Supply Association has, as yet, done much in carrying out these industries on a national scale, nor have they established annual meetings for the display of insects and their products, useful and noxious, as is done in Paris.

'The insect products that enter into commerce are cochineal, lac, galls, cantharides, and wax, and some small quantity of brilliant insects for ornaments for ladies. The value of the products imported at the two periods under consideration was as follows :—

Articles.	1867.	1876.
	£	£
Cochineal	777,534	343,885
Galls	77,221	64,704
Lac products	169,779	530,017
Bees' wax	77,868	146,677

'From its insular position and variable climate Great Britain has not hitherto been subject to any very extensive or periodical attacks from noxious insects. The hop-vines and some field and garden crops suffer, however, occasionally from insect depredations. Much useful information on the subject of economic entomology has of late years been given by the display of illustrative cases in the Bethnal Green Museum, under the directions of the Department of Science and Art, showing the stages of progress, ravages, and products, &c., of useful and noxious insects; and an official hand-book on economic entomology has also been published. Since the scare from the anticipated fear of the introduction of the Colorado Beetle, practical efforts have been made, as in other countries, to diffuse useful information, and to render the subject more familiar in its details to the general public.'

[Her Majesty's Commissioners are certainly not complimentary to British Bee-keepers, or to the nation at large, in this their 'Report,' which is vague, meagre, disparaging, and incorrect; and judging the 'work' by this example, we consider it valueless, for we have no faith in it. Had the Commissioners confined their 'Report' to what came under their notice at the Exhibition, they could have been pardoned for any error of judgment that might have occurred; but the sending forth of a Report on the condition of Apiculture throughout the 'kingdom' which ignores the labours and the annual exhibitions of the British (and its many kindred) Bee-keepers' Associations since 1874 is absurd and, if we may be pardoned the term, insulting.

Her Majesty's Commissioners evidently took very little trouble to be truthful, or otherwise, in their Report on the 'useful insect'—the bee. They tell us that the yearly import of honey is valued at from 10,000*l.* to 25,000*l.*, a useful (?) statement in a statistical sense; and the value of the wax imported is also given for two periods, but not a word is said of the home produce of those articles, or of the many thousands of pounds' worth that might be annually collected if a little less 'Greek' and a little more apiculture were taught in our national schools. The first sentence in the report on bees betrays the utter ignorance of the writers on the subject, for in it they ignore the *fact* that many hundreds of pounds are annually spent in importing Ligurian and other queens for the express purpose of improving the race here, and propagating their superior qualities. The Report is both misleading and disappointing, and should be made the subject of further inquiry by better informed and more earnest 'Commissioners.'—Ed. *B. B. J.*]

BEE-KEEPING IN 1654.

'We all dined at that most obliging and universally-curious Dr. Wilkins's, of Wadham College (Oxford). He was the first who showed me the transparent apiaries, which he had built like castles and palaces, and so ordered them one upon another as to take the honey without the bees. He was so abundantly pleased with them as to present me with one of the hives which he had empty, and which I afterwards had in my garden at Sayes Court, and which His Majesty (K. Charles II.) came on purpose to see and contemplate with much satisfaction.'—*From Evelyn's Diary. July* 13, 1654.

A clipping says :—'An Athlone shopkeeper has obtained a hundredweight of excellent honey out of a tall chimney of his house, in which a swarm of bees had built a hive. The trouble given by the bees led to the discovery of their storehouse.'

[There are plenty of bee-keepers who would be only too glad to be troubled with bees in this way.—Ed.]

Corrections. — September No. 'Feeding with Sweetened Milk,' after 20 degrees add Centigrade, equal in round numbers to about 70° Fahr.—October No. 'Cologne Exhibition.' For Herr Schmied of Eichsteid, read Herr Andreas Schmid of Eichstädt.

Correspondence.

*** *These columns are open to subscribers, so that their queries, replies, correspondence, and experiences may be* fully and faithfully *recorded; and for the discussion of all theories and systems in Bee-culture, and of the relative merits of all hives and appurtenances, that the truth regarding them may be ascertained. The Editor, therefore, must not be expected to coincide with all the views expressed by the various writers. All Correspondence is addressed to the Editor.*

HYMETTUS HONEY.

About ten years ago when on a private visit to Athens, the desire occurred to me to taste the honey lauded by the ancients, whose taste in more important matters still guides us. There was no difficulty in procuring what purported to be honey from Mount Hymettus. It had the rough appearance of homeliness, but there was of course no proof of its being made from Hymettus flowers; all I can say with regard to the flavour is that if it was manufactured in London, I should be glad to learn where more like it can be bought. I brought home for my friends a few jars which I had filled with about a dozen pounds of the Greek honey, and it was pronounced to be distinct and superior in its delicate and fragrant flavour to heather honey.

It seems to me that a 'ship's agent,' more especially a ship's agent at the capital of Greece, is about the last person one would employ to get genuine honey. What is Hymettus to a ship's agent? What are Hymettus and its honey to any modern Greek, in comparison to what they are to, say, an Oxford first-class man? To go to a 'ship's agent' for honey seems to me uncommonly like going to the ship's carpenter for a coat equal to Poole. Genuine Hymettus honey is undoubtedly procurable at Athens if you go the right way about it. But demand creates supply. The Britisher 'doing' Athens gives a lordly order, the Greek is equal to the occasion and gets something manufactured, and to please our national vanity has it labelled in our own language. Are not Egyptian gods and mummies, and Waterloo bullets, and old Greek pottery—to say nothing of English and foreign pottery, obtainable by any Briton with spare cash? Why not Hymettus honey? And are not they all to be 'ordered from London?'

'When Greek meets Greek then comes the tug of war,' then it is 'diamond cut diamond;' but when Greek meets a British sailor ashore there is no tug about it, and Jack is easily done with his eyes wide open. The 'fine Hymettus honey' supplied to Lieut. M——, R.N., and apparently eaten by your correspondent, 'H. J. W.' was probably a product of that very busy bee, the Levantine Greek, who swarms in the south-east of Europe, and is ever ready to cull from every opening flower, but specially from that which yields readiest (the *Britannicus auratus*) what is sweeter to him than honey—money.—C. J. B., *Hythe.*

CYPRUS AND HYMETTUS.

On looking through the *Travels of Edward Daniel Clark, LL.D.* the other evening, it struck me that it might interest some of your readers to hear what he says about Cyprus and Hymettus, I therefore copy and send the same for your use.—J. S. Wood.

'In these little cottages we found very large establishments of bees, but all the honey thus made is demanded by the Governor; so that keeping these insects is only as the means of an additional tax. The manner, however, in which the honey is collected is so curious, and so worthy of imitation, that it merits a particular description. The contrivance is very simple, and was doubtless suggested by the more antient custom still used in the Crimea, of harbouring bees in cylinders made of the bark of trees. They build up a wall formed entirely of earthen cylinders, each about three feet in length placed one above the other horizontally, and closed at their extremities with mortar.* This wall is then covered with a shed, and upwards of one hundred swarms may thus be maintained within a very small compass.'—*Cyprus*, vol. ii. p. 342, London, 1812.

'From this Monastery (Saliani) it is practicable to ride the whole way to the summit of Hymettus, but we preferred walking, that we might the more leisurely examine every object, and collect the few plants in flower at this late season of the year. We saw partridges in great abundance, and bees in all parts of the mountain, not only at the monastery, where a regular apiary is kept, but also in such numbers dispersed and feeding about the higher parts of Hymettus, that the primeval breed† may still exist among the numerous wild stocks which inhabit the hollow trees and clefts of the rocks.

'Their favourite food, the wild Thyme (Thymus Serphyllum), in almost every variety, grows abundantly upon the mountain together with Salvia pomifera, and Salvia verbascum, and to this circumstance may be owing the very heating quality of the honey of Hymettus.

'The powerful aromatic exhalation of these plants fills the air with a spicy odour; indeed, this scented atmosphere is a very striking characteristic of Greece and of its islands, but it peculiarly distinguishes the mountains of Attica.'—*Hymettus*, vol. iii. p. 576, London, 1814.

MEAD BREWING.

As many of your readers, having a surplus of honey, might wish to try their skill, I have thought that a few instructions, as a guide to brewing mead, might be acceptable to them.

Notes as Caution.—1. No reliable, precise method, or recipe, can be given, as the honey, water, and temperature vary so much in different localities.

2. Cleanliness and observation.

3. That sugar, especially grape sugar, transforms to alcohol and carbonic acid, so that when the sugar stuff is consumed, or transformed, there commences another fermentation where the alcohol goes over or transforms to vinegar; therefore, *too little honey* should not be used at *first.*

4. That the brewing vats or tubs are first well scrubbed with a warm solution of, say, half a pound

* The hives of Egypt and of Palestine are of the same kind. 'Those of Egypt,' says Hasselquist, 'are made of coal-dust and clay, which being well blended together, they form of the mixture a hollow cylinder of a span diameter, and as long as they please from six to twelve feet. This is dried in the sun, and becomes so hard that it may be handled at will. I saw some thousands of these hives at a village between Damiata and Mansora.'—*Hasselquist's Voyage and Travels*, p. 236, London, 1776.

† 'The antients believed that bees were first bred here, and that all other bees were but colonies from this mountain.'

of soda to a bucketful of water. After thus cleansing, to stand a day with pure fresh water in. No new casks should be used to put the mead in; but casks that have had wine, brandy, or rum in are best after having and been cleaned rinsed as before described.

5. The water to be used as soft as possible. To find out the most suitable, the two following simple tests may be employed :—(*a*) Add a few drops of alcohol to a glass of the water intended to be used. If it becomes unclear, it is unsuitable in proportion to the unclearness ; (*b*) or, take about one quarter of an ounce of soda and dissolve in distilled water (say, a tumblerful) ; then to the different glasses full of waters that you want to test, add a teaspoonful of the soda-water, and decide the result as in (*a*).

6. *Fermentation.* When a mixture of honey and water are left to themselves, fermentation will commence after a longer or shorter time. This is spontaneous fermentation, in opposition to fermentation produced or hastened by the addition of barm or yeast ; but as in the former it can take six months before it begins, it is very common and advisable to hasten the process by the addition of a very small quantity of yeast.

7. Not to forget to rack off from one cask to another as often as necessary and at a proper time.

Mead by Spontaneous Fermentation.—Add honey to boiling water until a saccharometer (sugar-measurer) shows 28 degrees, then boil slowly for three hours, skimming the scum off that rises all the time. While boiling, there must be added one and a half pounds of good hops to every twenty gallons put in the mixture. When cold, put into a cask which must not be corked too tight for six weeks. The cask must not be quite full, and there must not be any yeast put in.

Mead by using Yeast.—Add honey to boiling water, as in the last, until it shows the proper number of degrees. Then simmer slowly for three hours, and skim as before mentioned. When cooled to the temperature of 68° or 70° Fahr., it can be put into the cask, and about a gill of well-washed barm added and stirred in. Then put the bung or cork with linen on very lightly in, and allow it to ferment. As soon as fermentation is over, it must be racked off : while fermenting, the cask should stand in a cool place, about 55° or 60° Fahr.

Mead brewed in October or November should be racked off in April for the first time ; if brewed in February or March, in May month for the first time.

If a saccharometer cannot be got, use a fresh-laid egg ; and make the mixture so strong with honey that it will float the egg on its side, and show so much of the egg above the surface equal to at least one inch in diameter.—J. S. Wood, *Nyborg.*

TO LIQUEFY CANDIED HONEY.

The best method to have honey in the liquid state is to place the glass or jar in a warm bath or in a moderately cool oven. The heat in both cases must be gradual, otherwise the glass or jar will crack. Cover the honey while melting. When candied honey has been thus melted, it will remain for a very long time, and I have had cases where it would not even stiffen again. Honey is much more economical and pleasant to the palate when liquid. The covering retains the aroma.—J. S. Wood.

STUNG BY A WASP.

I send you the following particulars with regard to an event that nearly cost a schoolmaster his life, through the sting of a wasp, fourteen years ago.—F. H. H., *Abbot's Langley.*

'On the afternoon of the 27th day of August, 1866, while jumping from a high path into a road, I drew in a wasp with my breath, and was stung in the throat. I nearly swallowed the wasp, and had great difficulty in bringing it up. At once my throat began to swell; I had to unbutton my collar, and a feeling of suffocation and deafness came on. I soon became too weak to stand, and my friends thought it was all up with me. Hot flannels were applied to my throat, but seemed to do me no good. After trying vainly to swallow a little warm water, some honey was poured into my mouth, and my throat rubbed with honey, which soon produced a soothing effect : and after clearing my throat of much mucus, I felt myself out of danger. I firmly believe I should have been dead in a few minutes had not the honey been applied.—W. R. H., *Abbot's Langley.*'

NEW CURE FOR STINGS.

I am so susceptible to the stings of wasps or bees that I have almost made up my mind upon several occasions to give up keeping the latter. I am, however, fond of them, and have lived in hopes of discovering a remedy for their stings. I have tried Liquor potassæ, carbonate of soda, carbonate of potash, vinegar, caustic, wetted tobacco, camphorated oil, blue bag, and several others, but never found anything affect the sting, which ran its most disagreeable course, once or twice necessitating the calling in a medical man, until my gamekeeper said, Try the oil made by melting the fat from the inside of a viper. He prepared some for me, and it answers perfectly. I have tried it upon two stings, and the effect is marvellous.—A. W. M., *Liss, Hants.*

[We have often wondered if such vermin as vipers had a use. Who will breed them for the sake of their fat? Genuine viper fat, we fear, will be as difficult to obtain as genuine bear's grease, but who knows?—Ed.]

BEE AND WASP STINGS.

There is not much fear that wasps will be any more trouble this year. But I may inform you, that gin has been found to stop the tongue from swelling, by holding a quantity in the mouth, and my family have found it very effectual, by applying it with a piece of cotton to other parts that have been stung; but it often occurs to me, that what will relieve one does not have the same effect on another. Equal parts of sweet-oil and laudanum will relieve also for the sting of a bee; and I find for myself nothing equal to a little damped earth soil rubbed in as soon as possible after the sting has been extracted.—J. Tolhurst.

[No truer observation has been made than that what will relieve one person will not have the same effect upon another, and therefore, having found what answers the purpose, each should keep his remedy at hand. The

application of gin to the tongue would suit not a few probably, but sweet-oil and laudanum should certainly not be applied in the same way, or, at least, not in such doses as would perhaps do no harm in the former case, since a few drops of laudanum will cause stupor or death if taken into the stomach. Those who suffer from the receipt of stings should have their remedy at hand for instant application, so as to prevent the absorption of poison into the system. Afterwards the remedy will be for the inflammation caused by such absorption, which is a very different matter.—Ed.]

BEES IN A DWELLING-HOUSE.—VALUE OF THE SUPERING SYSTEM (?).

In your October number I noticed a query from one of your correspondents as to how to remove bees from a dwelling-house. The following description may be both useful to him, as well as interesting to your readers:—A friend of mine, who had for many years been troubled by bees in his house, asked me to come over and see what I could do towards removing them. Accordingly, I went and found a very strong colony had established itself between the ceiling of the drawing-room and the floor of the room above, access being obtained through an air-brick in the wall. The village carpenter was summoned, and quickly removed the floor-boards over the spot where it was thought the bees had located themselves, but no combs or bees were visible. He then removed with his chisel a false floor composed of laths and mortar to deaden the sound, when a sight was revealed to gladden the heart of any lover of the bar-framed system of bee-keeping. A more perfectly constructed bar-framed hive I never witnessed. Between two joists of the floor, extending for more than two yards in a longitudinal direction, were fifty combs, weighing in all 83 lbs., hung one behind the other, and built so straight, that had it not been for the weight of honey, they could have been lifted out with the laths, as in a frame hive. As far as I could judge, the combs were the size of Abbotts' Standard frames. In the centre were empty brood combs, very black, with no brood in them, and very little honey. At the two extremities, the combs were evidently new, and so filled with honey that they broke on being lifted.

The bees were quieted with copious fumes of brown paper soaked in saltpetre; but their number was surprisingly few compared with the size of their hive. There could not have been less than fifty combs, yet I venture to say there were not more bees than I have in one of my bar-framed hives of eight frames. The sight of this long, natural framed hive, which the bees had selected and worked out entirely unaided, taught me a lesson or two which I shall not soon forget.

The first was to convince me of the absurdity of the craze people have for supers in frame hives. Again and again, I see letters and questions with one and the same complaint, 'My bees will not take to the supers. The question is, 'Why on earth should they?' I believe bees *hate* an upper storey; they infinitely prefer to be on the ground-floor with the heat radiating, right and left, from the brood-nest, as I found it. This year I had a very strong colony that I was determined should yield me some comb-honey. It refused to make use of the most tempting super sections. I accordingly took out a frame of honey, and broke it up, inserting an empty one; at once the bees set to work to fill it. I believe the Italian system, which makes no use of supers, but keeps adding frames at either end, is the system we ought to adopt. Mr. Abbott hit the right nail on the head when he introduced those long frame hives, the frames of which can be increased or diminished in number at will. If sections are wanted for sale, I believe he has frames to contain four sections apiece which can be dropped into the body hive like an ordinary frame. The bees I found had evidently been adding, year by year, new combs on both sides of the brood-nest. The outer combs on each side being delicious comb-honey quite fit for immediate use. Why cannot our bar-framed hives be managed on this principle, and the cold upper-storey system of sectional supers, which the bees evidently take to reluctantly, done away with? In the case I have mentioned there were at least 60 lbs. of honey over and above what the bees required for their winter consumption, all stowed away without the use of a single super. With the aid of a little smoke, the bees kept retreating from comb to comb, so that the taking of the honey was not a difficult task, and we scarcely got stung at all. I have taken a great deal of honey this year from my own hives, and most of them now are very heavy with no feeding; but only *one* hive out of nine took to the supers, yet I obtained a good harvest from the body hives. I do not know whether you agree with me, Mr. Editor, but I think the English bee-keeping public have gone super-latively mad, and have yet to learn that more honey and equally good comb-honey, can be procured without the use of supers at all.—H. E. Sturges, *Wargrave Vicarage.*

BLACK *v.* LIGURIANS.—HONEY HARVEST.

We have had a first-rate heather honey season in this part of the country. I have remarked, and so have others hereabouts, that the blacks fairly beat the Ligurians as heather honey gatherers this year. Supers upon black stocks were better finished, and were far whiter comb when sealed, than those from yellow stocks. The yellows, however, have kept up a far better population than the blacks, who seem to have almost worked themselves to death.

I have extracted heather honey with one of Steele's extractors after it was two weeks gathered. It is most troublesome to manage though even then, and if not operated on when hot from the hive will not *come* at all. Three or four days is as long as it can be left in the hive and be easily extracted. If extracted the same day as gathered, it is exceedingly thin, and does not keep well in the jars. There is some peculiarity about heather honey, which makes it thicken in the comb to a mass resembling jelly, and when this is brought out in an extractor it comes solid from the cell. Extracted clover and heather honey do not mix well. I wonder if their specific gravity is the same? I think not;

for when mixed they do not amalgamate, but remain as a sort of mechanical mixture. Is honey used in the arts to any extent? Who will write an article on its use in this connexion?—G. A. R., *Braes o' Angus.*

A HONEY MARKET.

It may interest you and some of your readers to know that I have found a ready way of disposing of my honey, by sending it to Messrs. W. and H. Bristow, 240 Central Poultry and Provision Market, London. By the account enclosed, you will observe that all the honey realised over 1*s.* per lb. I put up most of it in 2-lb glasses, which I procured from Messrs. Abbott Brothers, tied them over with vegetable parchment, and put on labels 'Pure English Honey;' and they looked very neat and tempting.

Messrs. W. and H. Bristow have a good West-end connexion. I had previously sent them two hampers of honey, which also sold well. I have sold 200 lbs. without any difficulty. Some in bulk, 20 lbs., at 1*s.* per pound.—JOHN URELL, *Great Maplestead, Halstead, Essex.*

[We append copy of the account, which may be of interest to bee-keepers. Inquirers must please address one or other of the parties named, as we have no knowledge of the business; and letters sent to our office cannot therefore be efficiently replied to.—ED.]:—

Nineteen Jars of Honey.

		Per lb.	£	s.	d.
1	8 lbs.	1/1	0	8	8
2	5 lbs.	1/2	0	11	8
		Each.			
16	2 lbs.	2/6	2	0	0
19 Jars.			3	0	4
	Cyc.	0 2 5			
	Com.	0 3 2			
			0	5	7
			£2	14	9

PROPOLISING THE QUILT.

It seems now generally admitted that a soft quilt is the best covering for the frames during winter, with or without the adapting-board; but inasmuch as they cement it down so firmly to the bars as to stop all ventilation, and is so difficult to remove, would it not be advisable to have a sheet of paper (such as the grocers use for sugar) laid on previously, and the quilt over it? The paper would be more easily removed, and for the sake of free ventilation a slit might be made through the paper between the bars; then would it be advisable to lay a thin board on or not? My plan is to lay a warm cushion (lined with thick flannel below, and canvas on top, stuffed with feathers or some soft material) on the board and roof over, and a thick thatch of straw over that projecting, so far over as to preclude any drip falling on the edge of floor-board. I should esteem it a favour if you would give me your valuable advice on the above subject. —GEO. RINGER.

[Where propolis is used to a great extent, and there is danger to the bees through insufficient ventilation, we would make a number of pin-holes through the quilt, between the frames, right over the bees, and cover it with a pillow or cushion. In cases where bees stick the quilt so closely, please to imagine how firmly they would glue down a crown-board, and how difficult the removal of the latter would be as compared with the former. A quilt may always be pulled off by one corner, like stripping off a plaister; and smoke applied as it is removed will keep the bees from 'rising,' but, if a novice wants a *little 'experience,'* he is welcome to the consequences of wrenching off a crown-board.—ED.]

KELSO SHOW.—CORRECTIONS.—HONEY HARVEST IN SCOTLAND.

Will you kindly put a correction in the *Journal* regarding Wood's prize for Observatory Hive? He should have been first, and Ellis second. Also Steele, of Fowlis, writes me he had never seen 'Cowan's' extractor when he invented his own; so that it is the old story of two minds having the same idea at the same time in different parts of the country. He says there is a description of his in the British Bee-keepers' Association's new book; perhaps you will kindly notice this.

What a splendid honey harvest we have had this year! This is the best I have ever known, as the last was the worst. From one stock I took 143 lbs.; its gross weight was 180 lbs. That's up to the mark, eh? Heather honey keeps its price in Glasgow; the shops are still selling it at 2*s.* and 1*s.* 6*d.* per lb. But we want a merchant for a large quantity at 1*s.* 3*d.* Do you think that price would return a saleable profit in London? Ligurians about here have been robbing from many old hives that were left out—that had died during the winter; and in some cases foul brood has made its appearance.—R. J. BENNETT, *Glasgow, Sept.* 21, 1880.

CHEAP AND GOOD COVERS FOR STRAW SKEPS.

These can be made of the round American cheese-boxes, which can be obtained for a copper or two at almost any provision-dealers. Earthenware covers, such as are used on bread-pans, cost about 1*s.* 6*d.* each, and keep the hives dry and firm. These are infinitely superior to straw hackles, inasmuch as they are neat, dry, tidy, do not harbour vermin, and give easy access to the top of the hive for autumn or spring feeding.—C. T.

COVERING UP FOR WINTER.

The rush covers that so many grocers receive on their tea-chests will be found very handy for helping to make hives snug and warm for the winter. They can be had for a mere trifle, and can be readily cut to any size for packing the sides or tops of frames, &c., when carpet or other woollen material is scarce —SOMERSET.

EXPERTS FOR COUNTY ASSOCIATIONS.

It is quite time to increase the number of experts, for the supply has long been unequal to the demand during the busy season. In most counties there is at least one man who can handle bees with sufficient skill to be able to do driving at local shows, and transfer stocks from skeps to bar-frame hives.

Secretaries will do well to look up such men without delay, and try to arrange for next summer's campaign. If a few such could be induced to place their services at the disposal of members of county associations on reasonable terms, they would render invaluable assistance to our cause, as each would be a travelling teacher, as well as a practical helper, if they could be got to work amongst old-fashioned bee-keepers during spring, summer, and autumn.—LLONGBORTH.

MOVING AN APIARY.—OVERSTOCKING A DISTRICT.—HONEY SOLIDIFYING.—PROFITS ON BEE-KEEPING.—HINTS IN GENERAL.

Now that the honey harvest is over and things are getting a little quiet in the bee world, perhaps you will allow me to consult you on one or two matters which my season's experiences have brought up for consideration?

I am in difficulties about the situation of my apiary. It occupies a very good position so far as shelter and dryness and freedom for flight are concerned; but unfortunately it is within from ten to twenty yards of my front door, a gravel-drive and a laurel-hedge only intervening. The consequence is, that in the depriving season, when *my* bees, at all events, are rather cross, not only members of my own family, but visitors occasionally, come to grief; and I find that with the usual perversity of human nature, and especially the female portion of it, people *will* persist, in spite of warning, in exposing themselves to danger at such times, being under the necessity of coming close up to the hives and speaking to one in the midst of the most critical operations. My wife, for instance, who is quite fearless until she is stung, gets her face swelled up every ten days or so, like one of Sutton's prize turnips. Interesting young ladies get stung in the eye with the immediate and inevitable effect that one cannot but feel oneself, as everybody else at the time thinks one, to be a brute for being the owner of such disagreeable bees. There is added to these inconveniences the fact that, having met with a fair amount of success in my bee-keeping this year, I have had the misfortune to stir up a little jealousy among some of my less successful cottage neighbours; and that consequently, being a parson, and therefore not entitled to existence as a bee-keeper except on the smallest possible scale, it would be better for me to keep my apiary in the background. Under these circumstances I am very reluctantly forced to think of adopting another site. I have none so good as the present one; still I have one that might be made to do; and I have reckoned that, according to the old rules, it would take me about fifty or sixty days of fine weather and hard labour to move my bees into it.

Now supposing it to be impossible, as I presume it is, to extract honey and remove supers without irritating bees, I want to know whether there is not some royal road to the attainment of my object. I do not wish to move my bees at all if I can help it, because I in a great measure attribute the moderate degree of success I have had with my apiary to the favourableness of its present site. But I do not see how I can contend any longer with the difficulties of my case as it now stands. Can you help me?

I wish very much also that you would give some authoritative pronouncement as to the number of bees that may be kept in a district, with a radius of, say, four miles. I believe I am credited, among my other evil deeds, with that of starving some of the cottagers' bees in my immediate neighbourhood. "'Tis na'ar a mossel o' use for nubbody to keep no bees at ——— not now. Payson's, THEY hev's t'all now!' My own belief is, that for two or three weeks of the past season in my own district, vast quantities of honey were simply wasted for want of bees to gather it.

Have you noticed, or heard of, and if so, can you explain, the cause of patches of crystallised honey appearing here and there in the combs this season? I have found it so while extracting from hives that have never had a chance of tasting sugar. Some of my neighbours have also noticed the same thing in their hives.

I sometimes read very despondent communications in your *Journal*. I, too, have my dark hours. But perhaps it will help to encourage some dispirited amateurs if you will record the amount of success which a comparative bungler like myself has achieved during the past season. At the end of last season I found myself in possession of sixteen stocks fairly supplied with bees, but entirely without provision for the winter. What was I to do? I know they could not live as they were, and I could not voluntarily destroy any of them. I had previously united as much as I well could. I therefore determined in good time to invest about 3*l*. in sugar and fetch them up to the proper mark. Many of my neighbours thought me wildly speculative and foolishly extravagant; and one large bee-keeper I know prophesied that such treatment would infallibly be the death of my bees. But none of them died, and as a result of the season's business I now find myself in possession of 33*l*. 10*s*. in hard money, and twenty-three good stocks, NOT requiring to be fed for the winter; my numbers having been reduced to this figure from a much larger one, by driving, uniting, giving away, and selling.

To guard myself in some small degree from the reproach of misapplying my time and getting gain thereby, I give all the profits of my bee-keeping to a religious society. May I suggest that there are great numbers of people who would be open to no such reproach if they devoted some or even the whole of their time to bee-keeping with the same object? They might in this way provide themselves with an unfailing source of wholesome amusement, more especially if they could do a little carpentering (as all bee-keepers should, and most—whether male or female—might easily learn to do); and at the same time have the satisfaction of contributing some substantial benefit, more or less, to whatever charity or good work they might feel inclined to favour. I myself should like to, if I might, put in a word for the S.P.G. Only I must warn all intending beginners that they must be prepared for failures, difficulties, and discouragements. I have had my share of them, and shall continue to have them, no doubt; but I am quite sure that they can be overcome by patience and steady resolution, and that they are far more than compensated by the pleasures of the pursuit—to say nothing at all of the solid gain that must eventually be the reward of perseverance.—J. H. D., *North Hants*.

[It is not easy to establish a royal road to the removal of supers and the extraction of honey, particularly in an apiary already established. If about to commence an apiary, we would advise the use of hives that give special facilities for deprival, which few on the old system of supering only, offer. We *have* a royal way of preventing the sixty days' labour, which would be undergone if the apiary be removed forthwith as suggested. We would wait until spring when the bees swarm, and immediately the swarms are hived we would put them in place of the stocks from which they came, and would take the stocks to the new site that has been selected, and set them in their appointed places, and the same evening we would remove the swarms to their new site, and the whole business would be completed. If swarms (increase) is not desired, let them swarm nevertheless, and take care to put stocks and swarm close together in their new place, and unite as soon after as convenient. The certainty of the operation consists in the fact that at swarming all the flying bees will have joined the swarm

when it has been put upon the old stance, whence being in the character of a swarm, they may be set in any place you please, as is well known. To make them mark their new site, it is, nevertheless, advisable to plant a branch of a tree at the hive front so that they shall have their attention directed thereto, and not fly abroad as if they had not been moved.

Regarding the number of stocks that may be placed upon a district with a four-mile radius, which includes an area of over fifty-two square miles, we may safely say that a couple of thousand stocks would be a comparatively small number if the district is only fairly good; but we fear it will be useless to tell this to those you mention. They do not see that by attention and feeding, to ensure abundance of bees in time for the harvest, that you have the whip hand of them, and that yours begin storing honey when theirs only just commence breeding, and that by the time they have their hives full of bees, yours are full of honey. If they would follow your example, they would do as well, while yours would do no worse. The solidifying of certain honeys is quite natural, and does not in the least imply admixture of sugar-syrup. Ivy honey will set in a week.

We thank you much for your excellent letter, and hope often to be favoured with your observations.—Ed.]

THE CONGRESS OF BEE-MASTERS AT COLOGNE.

I have read with much interest Colonel Pearson's report of the late Apiarian Exhibition at Cologne, and having also had the privilege of being present, I should like to make a few supplementary remarks.

In the general description of the Exhibition, I agree with what has been written. Prominent allusion is made to the perforated zinc or queen excluder. My attention was also attracted by the great number of cages (in size about 3 by 2 inches, and 1 inch deep with wires $\frac{3}{16}$ of an inch apart). These I understood were for the purpose of imprisoning the queen, and at the same time allowing the worker-bees to have full access to her. When her majesty is thus kept from traversing the combs, she is, of course, deprived of exercising her great functions of egg-laying. This restraint at the period of the year when honey is being gathered freely, is considered by the German bee-master an advantage, because he wishes the cells to be filled with honey instead of brood. The population of a hive, as we know, increases very rapidly in the ordinary way. This leads to swarming, which interferes with the productiveness of the stock from which the swarm emanates. When the queen is thus put 'into durance vile,' the cells are only open to the worker-bees to deposit the abundant nectar, and make additional work for the extractor. Run-honey appears to be much more in request in Germany than honey in the comb in supers. Consequently the exhibits of honey in this form were large. I may mention Mr. A. Schlösser, an able bee-master at Ehrenfeld, near Cologne, who had 1000 lbs. of honey in 137 glasses, said to be gathered from the Trifolium incarnatum, white and red clover, buckwheat, and corn-flour, all of which I understood he sold at 9*d.* per lb.

Most of the hives on show were of straw, and had small frames. There were a great number of them very similar in form. One frame-hive, however, was of wood, exhibited by Mr. F. Koester, of Limberg, of very ingenious construction. It was something like a large Huber hive, and the frames were kept close together by means of iron rods screwed tight by bolts, which, of course, might easily be loosened for manipulation, and at the same time allowed little chance of propolising. This gentleman had sojourned in America and returned to his native country imbued with inventive ideas, for he also produced an extractor of novel construction, the motive power being simply friction, by drawing a long, smooth piece of wood against a wheel, great rapidity and ease of motion were obtained.

Mr. L. Eylenfeld, of Frankfort, had a very ingenious hive, tenanted with living bees in the garden, very much in form like Mr. Gravenhorst's, with dome-top frames. These drew out bodily at the side, and ran on rollers very smoothly, with arrangement for easy extraction. Dr. Dzierzon exhibited a fine Italian queen, with a few workers, in a small glass case, which was priced at 12*s.* Herr Vogel had two similar cases of Caucasian bees with distinctive markings: these, like the Carniolan, are valued for their docile character.

As the Colonel has given some account of the papers that were read and discussed, I will content myself by touching on those to which he has not alluded.

One of the questions brought before the meeting was the cause of the decline of bee-keeping in the city and district of Cologne.

Mr. Schüller, a citizen, who introduced the subject, attributed as one great cause an absurd police regulation, instituted in 1855, viz. 'That it shall not be permitted to keep more than five stocks of bees to one house within the city and district of Cologne, in such a way as to make it possible for the bees to get to other people's property.' This refers to the sugar refineries; 'but,' said the speaker, 'I maintain that bee-keeping existed before sugar factories were built—bees could easily be kept out by wire-netting. It is incomprehensible to me (he said, amid loud applause) how the tax-paying citizens of Cologne should so long put up with such a regulation. Bee-keepers of Germany and Austria, let us get this police regulation withdrawn, and in its place have legal protection for bee-keeping! We in Cologne,' he continued, 'are about to form an association, and we look on your support as the most valuable and effective help we can have.'

Count Pfeil observed that the police regulation referred to was another proof that industries or manufactories are looked upon with favour, as bosom children, and agriculture only as a step-child. What has been stated by Mr. Schüller holds good, not for Cologne only, but for all Germany.

On Wednesday, the 8th September, the meeting was opened by the Chief Burgomaster, Dr. Becker. The first subject on the programme for the day referred to the transfer of larvæ from one cell to another, the practicability of which was illustrated by Pastor Waygandt, who read an excellent paper on the subject.

The speaker admitted that, strictly speaking, the procedure was of no great practical value at present, but he thought it might afford many advantages hereafter. For example, he said, a bee-keeper may have a strong colony of German bees, of which he does not want any offspring. He may, at the same time, be possessed of Cyprian, Carniolan, or Italian bees, with an original queen. It might thus occur to him how desirable it would be to obtain as many queens of the new race as useless queens of the German colony. Pastor Waygandt proceeds by cutting open with a pair of scissors a royal cell in a comb of a German colony, bending the edges back, taking hold of the royal larva in the cell by means of a pair of tweezers, and removing it. He then places the worker-larva of the race from which he wishes to rear queens upon a small camel-hair brush previously moistened, and transfers it to the empty royal cell, imbedding it in royal jelly; and after this no further manipulation is requisite. The workers in almost every case seal the cell, and the worker-larva becomes developed into a queen. The metamorphosis in most cases was distinctly recognisable on the following day.

In reply to a question as to the age of the larva to be employed in such manipulation, Pastor Waygandt said it did not make much difference. He had by such transfer succeeded in changing worker-larvæ, which were on

the point of passing into the pupa state, into royal larvæ, and had occasionally obtained very vigorous and even the most beautiful queens. The practical advantage of such transposition consists in our keeping a German colony and a number of queens of the race which it is decided to increase. Pastor Waygandt's most interesting speech was loudly applauded. It was followed by an animated discussion on the composition of chyle.

Dr. Pollmann, of Bonn, read a paper on the way to cure a colony which had drones only. The statements of this highly-educated bee-master gave rise to a tolerably excited discussion.

Mr. Frey, of Nurenberg, favoured the meeting with a most instructive speech on foul brood. After enumerating the various dangers of the disease spreading, which have so many times been repeated, he came to the question, what can the bee-keeper do to combat this dreadful disease? 1st. He should take proper means to prevent its appearance by arresting the conditions favourable to the development of the disease, or should try to lessen their injurious effect. 2nd. The bee-keeper should employ the proper means to stifle the disease should it have made its appearance. Upon the destruction of the vitality of the fungus which causes the disease depends the cure of the colony. Various remedies may be employed to destroy these fungi. Salicylic acid has been recommended as a cure for foul brood, and been employed with success. But there is a substance called salicylous acid, derived from salicylic acid, which Nature offers to the bees in one of our best-known flowering plants—the Spiræa ulmaria. This plant grows in a wild state in Germany. By encouraging the cultivation of which, bee-keepers would provide a natural preventive against foul brood. Bees are fond of visiting the flowers of this plant; but if the plant were dried, and then rubbed to powder, and mixed with the food in spring, it would probably also be of considerable benefit to bees.

Pastor Rabbow stated there had been cases of foul brood in his district, which, however, had disappeared without any measures being taken to cure it. He was inclined to think that the bees themselves had effected the cure through visiting the Spiræa ulmaria, which plant is frequently met with in his part of the country.

Various other subjects and propositions were discussed, most of which have been alluded to by Colonel Pearson, so they need not be repeated.

Count Pfeil proposed a vote of thanks to Mr. Sternberg, the Vice-President, for his able conduct in the chair, and this closed the proceedings of the discussion-part of the meeting for the present year. Most of the visitors afterwards dined together in the large hall of the Gürzenich.

At half past two o'clock more than 200 visitors, among whom were many ladies, sat down to a festive dinner in the beautiful decorated dining-hall of the Gürzenich, which is of baronial appearance; and when I mention that at the late fête, on the completion of the Cathedral, a banquet was here held at which the Crown Prince presided with the Burgomaster and Corporation of Cologne doing the honours as hosts, it may be imagined that we met in no insignificant building.

During dinner we had speeches both humorous and grave, and occasionally singing. Chief Burgomaster Becker proposed the health of the sovereigns of Germany, and Austria and Hungary, pointing out that so long as the two Emperors were united, no power would venture to disturb the peace of Europe. The Baroness Lina Von Berlepsch proposed the healths of the two Empresses Augusta and Elizabeth. After these two toasts the Prussian and Austrian national hymns were sung, the company standing—an efficient band taking the lead with the music. Mr. Sternberg proposed the toast, 'Success to bee-keeping.' Count Pfeil gave the toast, 'The city of Cologne and Father Rhine—*the venerable couple*.' Mr. Otto Hartman proposed 'The Ladies.'

A pretty little fair-haired girl from Erfurt, of the name of Frieda Wachter, recited, very audibly, a beautiful poem, dedicated to the city and magistrates of Cologne. After doing so, the young lady, who was elegantly attired, came round the tables to all the visitors, and touched glasses with us, an arduous task which she performed gracefully and unabashed.

Among the bee-keepers' songs there was one composed by our chairman, the chief Burgomaster, with the title, 'The Bee-keepers' Pride.' Fritz Böhle's song, 'From the bee-hive,' greatly amused the company. The translation of the fifth verse ran as follows:—

> Wax and honey are doubtless
> The monopoly of our bees,
> Prince Bismarck failed in his attempt
> To introduce the tobacco monopoly.
> The queen, if well looked after,
> Will lay 50,000 eggs a-year.
> Many a farmer would no doubt be glad
> If these were fowls' eggs!

(I am sorry I am not able to put the words into English rhythm.)

Each visitor was furnished with a book with the words of the various songs, in the singing of which most of the company joined, the band leading.

The speeches did not all emanate from the upper table where the principal guests were seated; but any one at any part of the hall appeared to have full liberty to unburden his or *her* mind, for the speaking was not confined to the male sex.

A young lady, of older growth than the Miss Wächter before alluded to, rose, and with a clear and pleasing voice invited the company in warm and earnest terms to meet next year at Erfurt in quite as large numbers as they had done at Cologne. This speech evoked a warm response on the part of the audience, and those within reach (as their custom is when a sentiment is expressed with which they feel sympathy) rushed to the speaker to touch glasses with hers.

Then speeches and songs occurred between the courses. The waiters evidently had to watch their opportunities. When there was a pause they took advantage of it to come in with the various dishes.

(To be continued.)

Echoes from the Hives.

Cowbridge.—'It may interest you to know about my bees this year. I reduced my hives last winter by doubling to eight, and increased them to fourteen for the summer. They are now reduced to eight again by uniting. The bees made for me upwards of seven cwt. of honey, which, at an average of 1*s.* a-pound, is about 40*l.* I think this is satisfactory, considering all the other bees in the parish, and particularly in the district, died, and I lost none; and considering also that I have never yet used any impressed wax, or increased except by natural swarming or inserted queens. Had I used these helps, no doubt my harvest would have been even larger than it has been. I may mention also that I have neither fruit-trees nor heather to help me. It is simply the outcome of a pasture and clover district. My hives are built by myself, as also my supers, so that I think any one may see that, with very little care, bee-keeping is a profitable undertaking. I am rather in a fright as to the winter, as I had no time in September to attend to my bees, the consequence is that I shall scarcely get the feeding done by the end of the month, and they are breeding away as if it were May; but as our winters here are fairly mild, I hope I shall do. I have only seen two wax grubs this year, and they both on a straw hive. I kept my old combs through last winter without any difficulty on that score.'—Stephen Nicholl.

Basingstoke, September 28th, 1880.—'This summer will gladden the hearts of bee-keepers a little; I have now been able to use some of the furniture I obtained last summer.—GEORGE HOLLEY.'

Nyborg, Denmark, Oct. 9, 1880.—*Danish Exhibition.*—'The diagrams arrived. The Exhibition was a very fine one. The Crown Prince and Princess honoured us with their presence, and must have taken great interest in the exhibits by the time they stayed. We had also many noted bee-keepers from the sister lands—Norway and Sweden, some of whom had been to the Exhibition at Koln, in Germany; and flattered us by saying, that with the exception of live bees, with which our Exhibition was not overstocked, it was as fine and imposing as the one they had seen. Our president this year for the exhibitions was Hoffjægermester Brunn, a name looked up to in Scandinavia as the first to awaken an interest in bee-keeping on the humane principle.'

Queries and Replies.

QUERY No. 356.—*Combination Principle.*—We constantly hear of bees refusing to go into supers, although working well in the hive. Why then are Combination hives so uncommon? Is there anything against them which in my ignorance I fail to see?—J. H. V., *October* 25, 1880.

REPLY TO QUERY No. 356.—We cannot offer a good reason why the principle is not more generally adopted. Doubtless 'fashion' has a great deal to do with it; but common sense is on your side and ours, your argument admitting of no denial. We know of nothing against the Combination principle, except the judges at shows and the influence of their opinions on the multitude. The judges, we humbly think, have a good deal to answer for in respect of hives, unless the onus lies with those who appoint them. We will refer to this question in a future number, all being well, and in meantime shall be glad to publish any and every objection that may be brought against the principle in question.—ED.

QUERY No. 357.—How early in spring may I transfer and unite stocks, if weak?—J. H. V.

REPLY TO QUERY No. 357.—On the first fine day after their condition has been discovered.—ED.

QUERY No. 358.—1. *Cleansing flight for Queens.*—How do you give queens a cleansing flight from their travelling cages? Is there no fear of losing them? 2. *Irascibility of Hybrids.*—Do you recommend keeping pure Ligurians entirely as far as possible, or hybridising? Is it the general opinion that 'hybrids are even more cross than are the pure black bees,' as stated by Professor Cook in his *Manual*?—L. N., *Wilts.*

REPLY TO QUERY No. 358.—1. Queens do not need a cleansing flight; it is the bees accompanying them that require to be set at liberty for a short time, which is done by opening their box and treating it as a small hive. It is very seldom that queens are lost in this proceeding. 2. Hybrids, *i.e.* the cross between the Ligurian and black bees, are much fiercer than the pure of either breed, and are far better workers. Professor Cook is not far wrong in his statement. For honey-getting purposes we recommend the hybrids in preference to others; but then we do not care about their fierceness—their stings have no terrors for us, if they had we should wear a veil and gloves when manipulating, as we advise others to do.—ED.

QUERY No. 359.—*Moving bees.*—I shall be changing my residence at early spring, and shall be glad if you will give me your advice as to the best time for moving my three bar-frame hives, and the best way to do it. The distance is two miles. I fear I am too late for your November *Journal*, but possibly you may be able to squeeze in a brief reply.—J. W. A., *Croydon.*

REPLY TO QUERY No. 359.—The removal may be effected at any time at this season when the bees are quietly within. Close the entrance and give upward ventilation, set the hives bodily on a hand-barrow (not a wheel-barrow) and let them be carried by two men. There should be no jolting, either in removal or replacement, and the whole business may be performed in an hour.—ED.

QUERY No. 360.—*Stewarton Slides.*—I have a Stewarton hive in which I put three driven swarms early in September, and fed them at the top by drawing two of the slides 2½ inches out for the bees to get at the feeding-stages. I now wish to close the slides, and next year I hope, if all's well, to open them their entire length; but I do not see how to do either, as the slides are quite immoveable, and I dare not put anything to melt the propolis, for fear of loosening the combs. An answer as to how to proceed will greatly oblige.—ECCE.

REPLY TO QUERY No. 360.—A heated bar of iron laid along the slides would soften the propolis that holds them without being likely to damage the combs which lie on each side of the slide. To save trouble, however, we should cut off the projecting ends of the slides, and fit them into the openings, so that in the spring, or at any other time, there need not be the same difficulty in opening the feed-hole when feeding becomes again necessary. If this is not agreeable, leave the slides projecting, and cover the opening with one or two thicknesses of quilting or carpet.—ED.

QUERY No. 361.—(1) *Barley-sugar in frames.*—Supposing a hive has not sufficient provision for winter consumption, will a frame or two of barley-sugar, hung next to the brood-combs, do to winter them on?

(2) *Cream of Tartar.*—In making barley-sugar, I have always found that after pouring it into the frames, it goes back into a sugary state again, a good deal like crystallized sweets. I heard the other day (and tried it), that a teaspoonful of cream of tartar to every 9 lbs. keeps the mass transparent. Do you think the cream of tartar will have any injurious effect on the bees?

(3) *Finding the queen.*—In opening a bar-frame hive, can you tell me where to look for the queen? I should know her majesty if I saw her, but as yet I have not been successful enough to catch sight of her.—ANONYMOUS.

REPLY TO QUERY No. 361.—Taking the second query first, barley-sugar cannot be made without acid being used. Cream of tartar is not injurious when used as suggested. Barley-sugar in frames would liquefy on exposure to the air, while the 'sugary' hardbake would not do so until water was added to it. They are poor apologies for neglect. A queen must be sought over all the combs; it is her duty to visit every part of the hive, and it is impossible to say at what time she will be in any particular place. The question was laboriously answered in August number of *Journal*.—ED.

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THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

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Editorial, Notices, &c.

A CONTRIBUTION TO THE PHYSIOLOGY OF THE BEE.

A Paper read by Dr. Dönhoff *at the Meeting of German and Austrian Bee-keepers at Cologne. Translated from the 'Bienen Zeitung' for the 'British Bee Journal,' by* S. Stutterd, Esq., *Banbury.*

1.—The Worker Bee is analogous to the Flower of Plants.

The same grub which develops into a working bee if it receives pollen in the last days of its larval life, develops into a queen when it receives a food whose nutritive elements are extracted from pollen, and are already partly transformed into peptones. The bee-grub cannot extract from pollen so much nutritive material and digest it, as it can assimilate; the grub, which obtains in abundance food already partly digested, receives sufficient nutritive material. On that account the royal grub grows much stronger, and has become on the sixth day of its life much larger and heavier than the worker grub. It is not the quality, but the quantity, of nutritive material which determines, that in the one case a worker will come into being, and in the other a queen. In the first case the ovaries remain small, the spermatheca becomes stunted, the reproductive instinct is not manifested, the body becomes hairy, the corbiculæ are developed, a part of the abdominal scales is transformed into wax-secreting organs, and the impulse to collecting, comb-building, caring for brood, defending the hive, &c., is manifested. Other animals, which may receive food but sparingly—the silkworm, for example—only remain of smaller size. So far as is known, no similar metamorphosis to that of the bee occurs in the animal kingdom. So much the more interesting is it, that in the other organic kingdom—the vegetable kingdom—a similar phenomenon occurs.

In the year 1764, Christopher Frederic Wolff, in his book 'De Generatione,' brought forward the proposition that the organs of fructification are only modified leaves. The calyx, says he, of the sunflower is nothing but a number of leaves accumulated together, and smaller than usual. The petals again are not otherwise, as the grasses prove. The seed capsules betray their nature as leaves when they are ripe, and spring apart; every valve is then a true leaf. Lastly, it may be seen in the case of a plant, which has already formed its calyx, and the beginning of its corolla and anthers in a poor soil, and is then quickly transplanted into a rich one, how the anthers, on account of the superabundance of nutritive material, become transformed into leaves. Our great poet and naturalist, Goethe, came forward with similar ideas in his metamorphosis of plants. It is then, as I believe, evidently demonstrated that cells, which otherwise would be developed into leaves or buds, in case of deficient nutriment, are developed into flower-buds. The facts which I have observed in regard to this are the following. Weak and sickly plants bloom earlier than healthy ones. In the nursery of Mr. Steinschen, landed proprietor, at Orsoy, there stand two thousand trees over eight years old. In the autumn of 1879, forty-two trees bore fruit, thirty-five were cankered, four were tall weaklings, about three there was nothing special to be observed. In the case of these trees, the flowers had developed in the place where in the non-blooming trees a young shoot had been produced. Manifestly, want of nutriment was the cause. Fruit trees, which grow very luxuriantly, may attain a considerable age before they bloom; but if some large root branches are lopped off, or some plugs hammered into the trunk, then they bloom. We often hear it said, the tree blooms so abundantly, it will bloom to death. The tree does not die because it blooms abundantly; it dies because it is out of health, and because it is out of health it blooms abundantly. If the branches on espalier trees are forcibly bent back, and then tied firmly; or if the branches of standards are weighted with stones so that they bend back, then they bloom more freely. The flow of sap is manifestly limited by the compression of the cells of the lower side. If a piece of bark is cut away from a branch, or wire firmly twisted about it, more flower buds will be formed. Wild stocks grow much taller and thicker than grafted ones, but they bloom much later. The oftener a fruit tree is grafted, the more is the formation of bloom facilitated. If apples are grafted on jenetins, or pears on quinces, or on dwarf trees, which can form but little sap, they will often bloom as early as the second year. With regard to grafted trees, the places of junction become more solid; dead

wood is included, by which means the taking in of root nourishment is made more difficult. In a dry season plants shoot earlier than in genial weather. The beet-root blooms first in its second year, but some ripen early and bloom in the first year. If beet-roots are transplanted, the proportion of blooming to non-blooming plants becomes larger. On one half of a piece of ground, beet-seed was sown in holes; when the plants were about six weeks old, all but one plant in each hole were pulled up. From the pulled-up plants, one was planted in each corresponding hole of the other half. In the first half I found, at midsummer, two plants in flower, but in the latter half, twenty-three. The flower stems sprouted out in the middle, and at the side in those places where leaves stood on the non-flowering plants. Through transplanting there occurred, for some time, a deficiency of nutriment. There can be no doubt that the formation of the flower, like the formation of the worker bee, is the same physiological occurrence, an alteration of vegetation arising from deficiency of nutriment. The quantity of nutriment very remarkably effects the opposite in plants to that which it does in bees. The leaf and the shoot are only capable of unsexual propagation. Leaves of Bryophyllum calicinum, of several ferns, Cardamine pratensis, and others, have buds which develop into new individuals, partly while on the plant, partly after its decay. A willow twig, stuck in the ground, develops without seed into a new individual; its equivalent, the queen, is capable of sexual production. The badly-nourished flower is capable of sexual production: its equivalent, the worker-bee, is only capable of unsexual production. As regards the bees, there occurs yet another metamorphosis, for the knowledge of which we are indebted to the sagacity of Dzierzon. It is the transformation of an egg of masculine character into an egg of feminine character. The nature of the two transformations is, perhaps, different. In the worker bee it is the want of nourishment: and, further, of a material that has not been rendered assimilable as contrasted with the superabundance of nutriment afforded to the queen. In the transformation of the drone egg, it is the seed which contains in itself the potentiality to transform into a new individual. The mule possesses just as much characteristics of its father as of its mother. In fertilisation there occurs a mingling of two germs.

Now, of course, the hypothesis lies near at hand, that the tendency to produce a male is contained in the bee egg, and that the tendency to produce a female is contained in the drone seed, and that at the mingling only the last formative development occurs, as indeed children are often similar only to their father, the face type of the mother is quite suppressed by the face type of the father.

[The remaining divisions of the paper treat of—2. On the derivation of the bee's organic powers from sugar. 3. On the bee's mental life. 4. Every individual bee chemically unique: and 5. Comb construction, an argument against Darwinism, which Mr. Stutterd has kindly undertaken to furnish; and we have little doubt but they will be equally interesting and instructive with the foregoing.—Ed. *B. B. J.*]

DECEMBER.

The winter, which began on the 20th of October with a severe snowstorm, caught many with apiaries unprepared for its early coming, and its continuance, with intervals of 'all sorts' of weather, has done no inconsiderable amount of mischief.

Bees that have been properly prepared for wintering need little attention, and those that have not will probably be a source of trouble, vexation, and loss.

Dysentery.—Already we hear of dysentery—or, as some are pleased to name it, 'abdominal distention'—decimating hives, the poor bees staggering out of the entrances to obtain relief by a purifying flight, but falling to the ground through being overcharged with fæcal matter, and perishing through cold and inability to rise on the wing and discharge it, a condition of things that would have been prevented had the directions in this *Journal* in regard to winter preparation been adopted *in time*. Dysentery is the winter scourge of the procrastinating bee-keeper; if he would but 'feed' early, so that the bees might evaporate the superfluous water and seal over the food, and at the same time give them due protection and ventilation, the disease could not exist; but with unsealed watery food that absorbs the vapours of the hive and becomes sour, the bees soon become dysenteric, and the food turns into poison, and in cold weather, when it is almost impossible to help them, or for them to help themselves, the disease gains ground, and the fate of the colony is sealed. Dysenteric bees appear to be unable to discharge themselves except when on the wing, which appears to be a wise provision, or the interior of their hives would become filthy indeed; but stress of circumstances often causes them to burst and die within, and then the disease, like typhus fever, runs 'a muck' among the population. The stench arising from the discharged matter is abominable, the unsealed honey becomes worse affected, the whole atmosphere tainted, and, poisoned by both air and food, the poor bees quickly die, and, if not observed, the hive will become the prey of robber bees, the poison of the hive will be disseminated, and, according to our theory, 'foul-brood' will be the result; and then 'woe betide' the apiary. When a hive is attacked with dysentery, the first steps necessary for the eradication of the disease are the removal of the unsealed honey from the combs, and giving a purifying flight to the bees; but these are usually difficult of attainment when the disease is most likely to exist, viz. in cold and wet weather. Giving wholesome food will be helpful, and the admixture with it of salicylic acid

in solution as in cases of foul-brood, will be further beneficial; and if the bees can be induced to take, and deposit it with the unwholesome honey, the disease will in a measure be stayed; but nothing will be so truly helpful to the affected bees, as a purifying flight. Had we a case of dysentery under the conditions named, we should provide a box of the same size as the hive affected, the box to have a glass front, and to contain a layer of chloralum powder as a dry disinfectant; we should then set the affected hive upon it, remove all but sufficient of the quilt to keep the bees confined, carry it to a warm, well-lighted room, and set it before a bright fire so that heat and light should have full operation for an hour or so. The effect would be that the lower box being well lighted, and the bees warmed into life, would descend into it, and have the opportunity of flying, which is essential under the circumstances, and the chloralum would absorb and deodorise whatever might fall into it, while the hive would be considerably dried, and the vapours escape through the thin quilt cover left upon it. This is the best help that we can suggest under the circumstances; but when the weather permitted we would open the hive, force the bees to fly, and having extracted all the loose honey, would spray the combs with salicylic solution, and feed with barley-sugar.

The worst feature in connexion with dysentery is in its having usually done a vast amount of mischief before it discovers itself at the entrance of a hive.

The causes act chiefly on the bees during cold weather; often when protracted frost has kept them clustered for a long time so that the living could not remove the dead, and the affected could not attempt to fly, and the hive has consequently become a pest-house. When discovered, the appearance of a few dead or dying bees on the alighting-board is but an index of the mischief within, and the bee-keeper cannot too quickly take the case in hand, and by the means suggested give the living bees a chance of clearing the dead from their cluster, and of rendering themselves more comfortable.

Searching with a Wire.—In cold weather, when bees are not able to throw out their dead, and show to their owner that all is not well within, it is a good plan to visit the hives occasionally during evening, and pass a hooked wire into the entrance, sweeping the floor-board in search of dead bees, or other *impedimenta*, as thereby the bees will be protected against the danger arising from accumulations of their dead, and the presence of dangerous conditions will be the more quickly discovered.

In hives where the entrances are sunk into (*i.e.* cut out of) the floor-board, this is not so readily performed, owing to the slope of the entrance-way being different to the level of the other parts of the floor-board; hence we prefer that entrances should be cut out of the bottom of hives, and the floor-boards left quite plain and flat.

AMATEUR LECTURING.

'I have read with much interest your last number of the *British Bee Journal*, and note with pleasure that you recommend us bee-keepers to try and extend the knowledge of the art. Now I wish to read a paper on bees to a Society in a neighbouring town, but am a little confused as to where I am to begin, the subject is so very wide. Now I think it would be a good thing if you could give in your next issue a few hints as to how the subject should be handled.—Robert Brown, *Donoghmore, Tyrone, Ireland, Nov.* 8, 1880.'

The subject is, indeed, a wide one, and when we find so great an authority as Dr. Dzierzon declaring that the little we know of bees is but as the shells on the sea-shore in comparison with the wealth of the ocean, we may well conclude that it is inexhaustible (see p. 107). For the purpose intended, *i.e.*, the encouragement of bee-keeping as a pleasant and profitable industry, we do not think it will be advisable or necessary to more than skirt the fringe of the natural history and anatomy of the bee; they are subjects too large to be dealt with satisfactorily before audiences such as are hoped for on the proposed occasions. Papers on bees, to be read before scientific associations, may deal with particular branches of either of the above-named subjects, and in each the more the writer dwells upon the minutiæ of every particular, the more interesting will his paper be to the scientists addressed. The queen, the worker, the drone, the brood, the wax, the cells, the honey, the pollen, and the propolis, would form subjects for long dissertation in the natural history of the bee ere they could be exhaustively examined, and the same may be said of every part of the bee's anatomy; but it is questionable whether a mixed audience would care to listen to them, or would profit by the scientific information given. There is, unfortunately, a tendency in lecturers, as in writers, to let the world see how learned they are rather than to be popular instructors, they get upon stilts and parade themselves before the multitude, and though looked up to by the throng, are not understood by one in a thousand. We do not seek to disparage expositions of scientific research, they are invaluable in the right place, but as inducements to cottagers to adopt the improved methods of bee-keeping, they are of doubtful value, since the technicalities employed frighten the ordinary mind, instead of enlisting its sympathy.

In proposing a lecture or reading in fulfilment of the purpose intended, we think the

title given to it should convey an idea of its immediate purport—whether a description of the bee, the hive, the method of management, the advantages to be derived from their culture, or any branch of either, when, except the one particular subject, neither of the others need be treated of, except incidentally, by way of introduction or explanation. From our point of view, the purpose would be best served by lectures or readings *On the Advantages to be obtained by the modern method of Bee-culture.* This would give scope for a short introduction and explanation of the queen, the worker, and the drone, and the phases through which they pass, and all that is necessary in that respect may be gleaned from the excellent paper entitled *Bees*, written for the Science and Arts (Educational) Department, South Kensington, and published by us (by permission) as a 'leaflet.'

Then would follow a description of the wasteful and cruel method of management, which so long prevailed throughout the country, instances occurring in the locality being cited, and the hive (the skep or box with its fixed combs) with its contents, explained, its unsuitability for investigation and depriving being dwelt upon. Then would come a description of the improvements that have from time to time been made in both hive and management, aided by such examples as may be at hand, to be followed by a comparison between the results of the new versus the old system, illustrated by the exhibition of pure extracted, and comb-honey in sections, as against the run-honey and supers of former days.

In advocating the new system, there will be opportunity for explaining the use of the extractor, the various methods of making swarms artificially, the methods of queen-raising, in nuclei and otherwise, the use and value of comb-foundation, the advantages of moveable combs, the adaptability of sections for honey-storing, the easy way in which honey may be taken, the facility with which hives may be strengthened and equalised, how they may be invaded and investigated, the facilities for the study of bees which they afford, and 'a hundred and one' other matters which the ingenuity of the lecturer, or the questions of the audience, may supply.

Our contribution in aid of the foregoing, alluded to on p. 126, consists in An Irish Hive, in which we have placed, for illustrative purposes, the following articles, labelled thus:—

1. A Woodbury frame, with fitted American worker guide-comb foundation sufficient to ensure straightness in comb-building. The cell bases of natural size and shape.
2. A Woodbury frame fitted with Abbotts' flat-bottomed foundation.
3. A Woodbury frame fitted with Abbotts' flat-bottomed foundation of a cheaper kind.
4. A Woodbury frame fitted with Abbotts' wood foundation ready to be given to the bees.
5. A Woodbury frame fitted with a full sheet of Abbotts' wooden foundation.
6. A Woodbury frame with a sheet of wooden foundation partly worked out into comb.
7. A Woodbury frame, containing a comb transferred from a straw skep, and enlarged by the bees.
8. A Woodbury frame, containing an old natural comb, with five old queen-cells in the centre.
9. A dummy frame filled with Abbotts' wood foundation.
10. Mechanical dummy. No. 40 in catalogue.
11. Queen excluder. No. 35.
12. An Abbotts' new-idea frame. No. 57.
13. 1 can and shovel for feeding purposes. No. 41.
14. 1 bottle for feeding. No. 42.
15. 1 specialty feeder. No. 43.
16. 1 Vale of York feeding stage. No 46.
17. 1 scraper for cleaning floor boards, &c. No. 48.
18. 1 Abbotts' Little Wonder Extractor. No. 53.
19. 1 Abbotts' honey-knife. No. 55.
20. 1 Bingham ditto. No. 56.
21. 1 Bingham and Hetherington smoker. No. 64A.
22. 1 steel gauge. No. 74.
23. 1 Clutton bee-trap. No. 77.
24. 1 Drone trap. No. 78.
25. 1 simple queen cage. No. 80.
26. 1 make-shift ditto. 81.
27. 1 Abbott ditto. No. 82.
28. 1 pair India-rubber gloves. No. 83.
29. 1 net veil. No. 84.
30. 1 Dr. Pine veil. No. 85.
31. 1 wax smelter. No. 89.
32. 1 American tin-feeder and stage—not catalogued.
33. Seven bottles containing (in spirit) Cyprian bees, *Syrian bees*, *Cyprian queens*, *Hybrid bees* (Ligurian and English), *Hybrid bees* (Syrian and Ligurians), *Hybrid drones* (Ligurian and English), *Ligurian queens*, *Ligurian drones*.

With these 'aids' a bee-keeper with average ability will be enabled to interest and entertain an audience for an hour or two, and if he can exhibit from his own apiary or locality some samples of honey in sections or otherwise, showing the results of improved management, with statistics to prove its greater value, the interest created will be sure to bear fruit, and bee-keepers will be multiplied.

The set of Association Diagrams costing 8s., and which accompany the foregoing, will be the property of the hirer of this 'box of tricks:' the charge for hire is 8s., and carriage both ways; and the hirer will be responsible for the safety of the goods, and must undertake to pay for all damages and losses while out of our possession. It is hoped that no one will keep the box long on hand; it is an expensive 'move' on our part, and we ask 'hirers' to take every possible care of the goods, that we may be saved more trouble than the effort naturally causes. At the late meeting of the British Bee-keepers' Association we suggested that some such box should be sent out under its auspices, as an aid to the development of bee interest at lectures, flower shows, &c., where there may be willing exponents of bee-keeping who lack the necessary means of illustrating its economy, and have every reason to believe that the suggestion will be carried into effect.

THE ASSOCIATION LIBRARY.

This excellent institution may now be said to be fairly afloat, and promises to do well in the future. It owes its birth to the persevering energy of J. P. Jackson, Esq., formerly of Bull Mill Apiary, Herts, but now removed to a new scene of usefulness in Lancashire, so that we may expect a County Association to rise up shortly under his bold hand in that unrepresented shire. Mr. Jackson has given the Association Library a good start, as may be gathered from the following list, which it is needless to say the Committee will be glad to see increased by the contributions of those who have the interest of bee-culture at heart, and have duplicate copies of works not already subscribed. The Baroness Burdett-Coutts, with her usual liberality, has given 5*l.* as the nucleus of a Library fund, additions to which will also be welcomed. Mr. F. Cheshire is appointed Honorary Librarian.

Bee-keeping: Manuals for the Many.
L'Apicoltore.
Gleanings in Bee-culture. (America.)
Bees: their Management and Culture.
Bevan's History and Management of the Honey-bee.
Bee-keeping, by 'The Times Bee-master.'
Bees: Habits and Management, by J. G. Wood.
Honey as Food and Medicine.
The Bishop's Advice, 'Keep Bees.'
Cook's Manual.
Bienen Zuchter.
50 Nos. of various German periodicals relating to bee-keeping.
12 Nos. of Gleanings in Bee Culture.
Langstroth's Hive and Honey-bee.
Bienen Zeitung, 3 vols.
British Bee Journal, 6 vols. (Including one unbound.)
American Bee Journal, 3 vols.
Moon's Bee World, 1 vol.
Gleanings in Bee-culture, 1 vol.
English Bee-keeper.
Bee-keepers' Magazine.
Kirby and Spence's Entomology.
Bevan on the Honey-bee.
Seventy Pounds a-year. How I make it by my Bees.
A Book for Bee-keepers.
Pettitt's Management of Bees.
Cheshire's Practical Bee-keeping.

BEE TENT IN IRELAND.

Our Irish friends are making forced marches into public favour if we may accept as evidence of the progress that has been made, the reply of the Royal Dublin Society to the application of the newly-formed Irish Bee-keepers' Association to admit their Bee Tent to future shows in the Society's grounds at Dublin, as follows:—

'*Royal Dublin Society,*
'*Nov. 23rd*, 1880.

'Dear Sir,—At the last meeting of the committee on agriculture, a resolution was passed granting the Irish Bee-keepers' Association permission to erect a tent in the grounds at the forthcoming Spring Show, and to charge sixpence per head admission.

'It is very unusual for the Society to make an arrangement of this sort, and I trust that it will prove satisfactory, and assist in promoting the objects of the Association. No arrangements are yet made for the Horse Show in August.

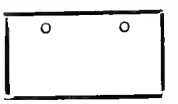
'I remain, dear sir, yours faithfully,

J. Traynor, Esq., 'R. J. Moss,
The Cottage, Tinahely. *Registrar.*'

The tent being an accomplished fact, arrangements can now be made for exhibitions of manipulations at local shows; and in the hands of such energetic promoters as Ireland can now boast, there is little doubt but that they will become the order of the day; and we confidently expect to see a full programme arranged for next summer, and the British Bee-keepers' Association will have the satisfaction of knowing that their missionary-like enterprise of 1880 was not made in vain.—Ed.

ABBOTT'S IRISH HIVE.

In the manufacture of this hive, outlined on pp. 126-7 of the present volume of the *Journal*, it will be necessary to procure inch pine for the body-box and floor-board, and $\frac{3}{4}$ inch * for the roof, unless yellow deal is preferred as being more economical. We prefer pine for the parts of the hive in which warmth is of importance, as being of a soft texture, it is not so good a conductor of heat as wood of harder grain, and therefore we use it chiefly in the manufacture of the body-box, which will contain the brood-nest. To make the body-box, two pieces of inch pine will be required for the back and front, each 16$\frac{1}{2}$ inches long, and 8$\frac{3}{4}$ inches deep, and in each there should be, at a distance of about three inches from the ends, and of $\frac{3}{4}$ of an inch from the top, two holes in which screws 1$\frac{1}{2}$ inch long should be inserted, so as to stand out $\frac{3}{4}$ of an inch, the purpose of which will be discovered as we proceed. For the sides of the hive two pieces will be wanted, each 20 inches long, and 8 inches wide, cut square at the ends; and on to these the front and back should be nailed, so that they shall form a bottomless box 20 inches long and 14$\frac{1}{2}$ inches wide inside, with the back and front standing $\frac{3}{4}$ of an inch above the sides. Now take two pieces of wood, each 20 inches long and $\frac{3}{8}$ of an inch square, and brad (nail) one of them to the top of each hive-side fair and flush with the inside† for the hive's frames



* Pine is ordinarily eleven inches wide, and we are presuming that width will be purchased, the pieces cut off being utilised for fillets, plinths, and ledges; or to make a fire to work by when the weather is cold.

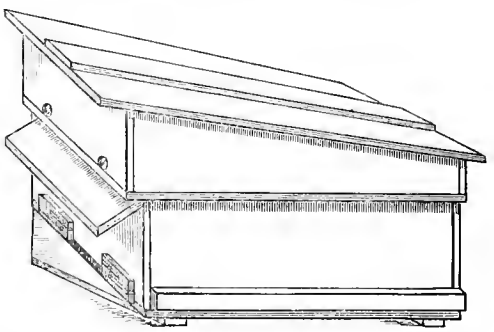
† In practice, this is left solid on the hive side; but in writing for amateurs of saw and hammer calibre, we prefer to show how the work may be accomplished in the readiest way.

to run on when all is completed. This will still leave the hive sides $\frac{3}{8}$ of an inch lower than the back and front; but the frames, when laid upon them in use, will raise all to the same level. To finish the body-box, two strips, $16\frac{1}{2}$ inches long, one inch wide, and half an inch thick, should be nailed flat against the front and back of the hive, close under the screws that are already there, and two pieces, each 23 inches long, and one inch square, should be nailed along both sides to meet them, the four pieces forming a half-inch ledge around the hive for the roof to rest upon.* Nothing more is needed but the entrance, or entrances, if more than one be determined on, and plinths nailed along the sides and back to overhang the floor-board and keep out the wet; but these, and the porch-piece, and entrance-slides, are too self-apparent to need description.

For the floor-board, two pieces, each 22 inches long, and $8\frac{1}{4}$ inches wide, will be wanted, the strips off the sides (they being originally eleven inches wide) being used for ledges to nail across them and hold them together, and it will then be of the exact size of the body-box, and we would advise that it be temporarily nailed or screwed on, to keep the hive firm and square while the roof is being made and fitted to it. Originally we proposed to form the roof on the American pattern with a flat top, but as there is little more trouble in making it to slope a little, and cast the wet behind it instead of allowing it to trickle down the sides, we have adopted the slope; and to get it and economise the materials, take a piece of $\frac{3}{4}$ inch board $22\frac{1}{4}$ inches long, and cut it diagonally as

indicated, leaving each piece 7 inches wide at one end, and four at the other, as nearly as may be. Now cut two other pieces 7 inches and 4 inches wide respectively, and 18 inches long, and nail them on to the others;† then nail two pieces 25 or 26 inches long, 11 inches wide, side by side upon them, and nail a strip about 2 inches wide over the joint in the middle, and the roof will be complete.

The roof is now ready to be placed upon the hive, and when there it will be found resting upon the four screws that have been inserted in the front and back pieces. Hence four half-circular notches will have to be cut into the lower edge of the roof-walls to let the roof down on to the ledge that runs round the hive. The purpose of the screws will now be discovered, for they, fitting into the notches, will keep the roof from shifting sideways, while they will be equal to hinges on which the roof may be raised at either end, the heads forming knuckles, which will prevent it slipping when so raised and lowered. This ingenious device originated with the Hon. and Rev. Henry Bligh, formerly of Nettlebed and Abingdon Vicarages, and who presided at the meeting of bee-keepers at which the British Bee-keepers' Association had birth. The height of the roof, as is the case in all other hives, may not be sufficient to satisfy those who have high faith in supering, but it is tall enough to admit American sections over the brood-nest, and to permit of bottle-feeding: and when this is deemed insufficient, an inch or two may easily be added to its lower edge, and sufficient space thus be made to receive any ordinary super, or pile of sections. It is possible also that the length of the hive internally (20 inches) may not be sufficient in many districts, but there again the maker is not bound by the dimensions given, for by elongating such parts as form the length of the hive, he may suit his own convenience.



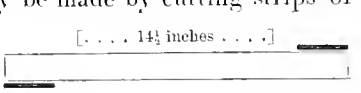
Individually, we would prefer the interior to be 30 inches long instead of 20, but many bee-keepers would stand aghast at such a hive, because it would seem impossible (to them) for bees to fill it. Nevertheless, as it could be made smaller by contraction from the rear, and empty back space could do no harm, we prefer the larger measure, if only for use as a depository for gloves, empty feeding-bottle, and honey-knife, or as a safe place for a few empty frames or sections.

In making the frame-bars for the interior, it is not essential that their ends should be pointed,

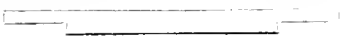
* Our dimensions are correct in this particular, as the frame-ends overhang the sides, but not the front and back of the hive; those who choose to do so may shorten the ends if they please, but we consider the projections valuable as a means of lifting or moving frames without mixing one's fingers with the bees, or messing them with propolis.

† In good work, the top surfaces of the roof walls would be planed even so that the roof-boards would bed fairly; but as ventilation is requisite, it is not absolutely necessary that they should touch all round. If made to do so, holes must be bored, and covered with perforated zinc, but every one can exercise his own judgment and taste therein.

as on p. 127;* but the widening is important, as they thus become their own distance-keepers, they may be made by cutting strips of deal an

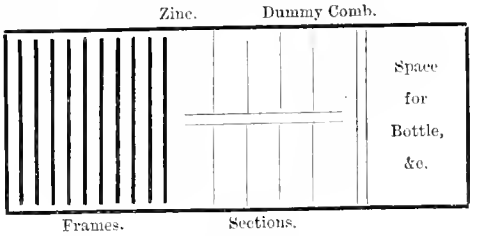


inch wide, and half an inch thick, and bradding other pieces on the ends, each half an inch square. The strips for the bars should be long enough to overrun the walls of the hive for convenience in handling, and the pieces nailed on should extend from the ends to the inside of the hive-walls, leaving 14½ inches between them, as indicated in the above figure. The bars will then be half an inch thick all along, but the parts resting on the hive-walls should be reduced so as to form shoulders to prevent longitudinal movements; a sixteenth of an inch will be sufficient.



14½ inches.

In furnishing the hive's interior, one can scarcely gauge the wishes of the bee-keeper, or the requirements of his locale, but for practical work and cottager's purposes, we would suggest eight frames as ordinarily sufficient for a swarm's reception, one of which should contain our wooden comb-foundation of the full size of the hive, to act as a divider, or dummy, to shut off, or enclose, the space or frames at will. The other frames should be fitted with guides, or foundation, as may be determined, though now that it is so cheap and effective, the bee-keeper who does not use it will not be adopting the best means to the end in view, viz., securing a harvest of honey. The frame of wood-foundation may have a slot cut in its bottom edge to give passage to bees, either to a feeder at back, or to sections for honey storage. The advantage of a divider, or dummy, made of comb (which cannot be broken) is inestimable. There is no known material that can be used for the purpose that is so bad a conductor of heat, and common sense would suggest that comb (even with wood-foundation) is more acceptable to the bees than plain sheets of wood, glass, or metal. And when the side exposed to the swarm has been built out and stored with honey or brood, what so likely to attract the bees to the sections in rear, as their own handiwork and treasure, enticements readily brought to bear by simply turning the frame of foundation round so that the honey or brood is brought within the storage department, the queen being kept out by a slip of long-holed zinc. In this way there would be space in the back of the brood-nest for four sets of sections, and others could be piled on top. But suppose the hive were made of greater length, say 30 inches, there would be space for, say ten frames and five sets of sections, with a zinc excluder between



them, and the enticing comb of wood-foundation *at the back*, and honey might be fed to the bees in the back space to get them well on to building in the sections, while, if desired, other sections might be placed all over the top, and storing facilities thus greatly multiplied.

If there are any parts of this description which are not easily understandable, or any missing link in the chain of description, we shall be very glad to furnish them in our next issue in reply to queries in the usual way.

* The illustration correctly shows the principle of Abbott's frame-bars, but not the way in which the ends are made. The engraver drew them from a photograph, and they are made to appear inverted.

BEE-KEEPING IN IRELAND.

We are glad to find that an energetic endeavour is being made to establish a Bee-keepers' Association for Ireland, and cheerfully comply with a request that the circular of the promoters may be published; and we hope that all who wish well for Irish bee-keeping will as readily acquiesce in its objects.

'A number of Irish gentlemen interested in apiculture are desirous of starting an Irish Bee-keepers' Association on the plan of, and to work in harmony with, the British Bee-keepers' Association, which has done so much to improve the practice of apiculture in the sister isle. The objects of the Association will be to introduce bee-keeping among the small farmers and peasantry; and in districts where bee-keeping is at present carried on; to instruct the bee-keepers by means of leaflets, &c., in the most improved methods of increasing the quantity of honey gathered, and getting it of a finer quality, which, if successful, will tend to keep money in the country, which is at present sent to America for honey, wax, &c. It is proposed that the minimum subscription for ordinary members should be, for gentlemen, 7*s.* 6*d.*, for ladies 5*s.* per annum, and for members of the Council 1*l.* 1*s.* I shall be glad to be favoured with your views on the subject, and any suggestions which may occur to you; also to know whether you would be disposed to join the Association if started.—Robert Sproule, 4 *Clonliffe Terrace, East, Clonliffe Road, Dublin, th November*, 1880.'

The circular was sent to us by Brother Joseph, of Loughrea, who writes:—

'I enclose one of our circulars, hoping you may refer to it in next *Journal*, and invite all Irish bee-keepers to join the Association. Mr. Sproule, Mr. Traynor, and myself are working very hard to establish it. We have

already about fifteen names. Mr. Sproule has kindly consented to act as secretary. We could not have a better man. I have the greatest confidence the Association will prosper under his management.—BROTHER JOSEPH, *Nov.* 12, 1880.'

That the subject is gaining ground may be inferred from the following, a short leader in the Irish *Freeman* of Nov. 6, which we commend to the notice of the Dublin Society:—

'We have reason to believe that what we have lately written on bee-keeping has attracted much attention in Ireland. Bee-keeping is an industry that is peculiarly suited to our country, and yet, strange to say, this is almost the only country in Europe where it is not practised. There was an attempt made to exhibit bees in connexion with the annual Show held in Dublin last September; but the committee refused to admit bees to the show ground. There is not another Agricultural Society in any part of Europe who would have acted in a similar manner, for we see everywhere prizes are offered, and bee-keepers induced to compete for them. The British Bee-keepers' Association visited Ireland last autumn, and held shows in Clonmel, Newry, and Parsonstown, and were very successful in creating an interest in bee-culture, and we have reason to believe there are now in Ireland—north, south, east, and west—many who are very successful, and even enthusiastic, in the study and cultivation of bees, according to the modern and humane system. But there is a want of union, which is so necessary to spread the knowledge among the cottagers of Ireland. We trust that something will be done before next season for the formation of a Bee Association, and that we shall have the pleasure of seeing the Bee Tent at the next Agricultural Show in the metropolis, as is done every year at the Kensington Show, and we may say at every agricultural show in England. We have no doubt but the Bee Tent, under the management of an Irish Bee Association, would be one of the most attractive features of the show. Seven years ago bee-keeping was very backward in England, but a few earnest bee-keepers held a show at the Crystal Palace, and founded the British Bee Association. Then they were few in number; now the numbers can be counted by hundreds. They have as their President the Baroness Burdett-Coutts. We find also that there is scarcely a county in England which has not its own Association affiliated to the principal one, having an earl here and a lord there as its president; and we have no doubt but a similar patronage would be extended to the Irish Association, if once established.'

A COTTAGER EXPERT IN SHALLOW WATER.

At the late Committee Meeting of the British Bee-keepers' Association, the Rev. H. R. Peel mentioned the case of Mr. Martin, the cottager-bee-keeper of High Wycombe, Bucks, whose example as a most successful honey-producer and prize-winner for several years past, while giving him considerable prominence, afforded a most valuable stimulus to others, and greatly aided the advancement of cottage bee-keeping. He has recently left the employment of Messrs. Neighbour and Sons; and with the winter before him, his own apiary disestablished, a crippled, helpless son on his hands, and himself lately become a widower, he is casting about for employment in bee-culture; and it is hoped that, by his case being made known through these columns, he may find that which is more congenial to his taste than chair-making, which was his calling ere his success as a bee-keeper brought him to the front in the bee-world. He hopes to be able to place his son in a 'home' for incurables, but has not the means under present circumstances. But to help him to this end, a sum of thirty shillings was subscribed forthwith, and we shall be willing to add to that sum any donations that kindly hands may send us. He feels competent to undertake the management of a bee-farm, and go out as Association expert, or to assist other bee-keepers in managing their apiaries. In the preface to the *Association's Handbook*, it is stated that, 'a County Association is no sooner formed, than a County Show is instituted, the Bee Tent arrives from London, with an expert who shows the cottager how to drive his bees, transfer his combs from skeps to hives, how to make artificial swarms, and in short how to keep bees intelligently and profitably.' And we would suggest to County Associations that William Martin would be just the man to employ for the above purposes; for, while doing him a service, they would be advancing the interests of bee-keeping in their respective districts. William Martin can make both skep and frame-hives, and do all that is necessary in the economy of apiculture; and knowing him to be a sober, civil, and willing hand, we trust he may find the kind of employment he is seeking. His address is Mr. William Martin, Plummer's Hill, High Wycombe, Bucks.—ED.

BRITISH BEE-KEEPERS' ASSOCIATION.

The Monthly Meeting of the Committee was held at 105 Jermyn Street on Wednesday, November 17th. Present Mr. T. W. Cowan (in the chair), Messrs. C. N. Abbott, Rev. E. Bartrum, F. Cheshire, J. M. Hooker, and the Hon. Secretary.

The minutes of the last Committee Meeting having been confirmed and signed, Mr. Abbott presented the report of Mr. Carr and himself relating to their Irish tour. Votes of thanks were unanimously passed to Messrs. Carr and Abbott for their labours in Ireland.

The Secretary reported that as a result of the visit of the Bee Tent in Ireland, an Association was now in course of formation for that country, the labours of such movement having been undertaken by Mr. Sproule, of Dublin (who was a member of the British Bee-keepers' Association), and other gentlemen.

A letter was read from the Science and Art Department, South Kensington, stating 'That the Diagrams published by the Association had been included in the department's list of apparatus towards which aid was granted to Science Schools and Classes.'

A letter was also read from Messrs. Longman & Co., of Paternoster Row, expressing their willingness to undertake the publishing of the *Handbook for Cottagers*. Resolved, 'That the Chairman, Mr. Cheshire, and Mr. Hooker, form the sub-committee for the purpose of making the necessary arrangements for the publication of the second edition of the *Handbook* to consist of five thousand copies; and that Mr. Cheshire have an interview with Messrs. Longman & Co. in reference thereto, and at the same time to ascertain if Messrs. Longman & Co. would undertake the publishing of the Diagrams on the same terms.'

Mr. Cheshire was unanimously elected Honorary Librarian of the Association, and votes of thanks were passed to the Chairman and Mr. Jackson for donations of books to the library.

The Secretary was requested to communicate with the Royal Agricultural Society with the view of the Association being represented at the Royal Agricultural Show at Derby next year.

Resolved, 'That Mr. Kirchner be appointed Auditor of the present year's accounts, and that the Secretary prepare the annual report at the close of the year.' The balance-sheet for the month ending October 31st was read, showing a balance in hand of 29*l.* 13*s.* 7*d.*

BRITISH BEE-KEEPERS' CONVERSAZIONE.

This took place at 6.30 p.m. on Wednesday, Oct. 27th, at the conclusion of the Conference with the County Representatives. The Rev. W. Stuart Walford, Hon. Sec. of the Suffolk County Association, presided; and there were present the Revs. T. Lawson Sisson, J. L. Sissons, H. R. Peel; Captain Campbell, R.N.; Messrs. J. R. Jackson, T. W. Cowan, F. Cheshire, J. Littleboy, J. Garrett, R. A. Boissier, P. E. Martin, J. Abbott, F. Lyon, E. S. Wheeller, J. Lemare, R. Jonas, H. R. Vincent, J. W. Wright, J. Camaschella, W. Martin, W. Allen, and others.

The Rev. E. Bartrum, M.A., Head-Master of Great Berkhamsted School, read the following paper on—

THE STEWARTON HIVE.

I hope I shall not be considered presumptuous in bringing the Stewarton Hive before the notice of the British Bee-keepers' Association. When I first determined to become a bee-keeper, and consequently was compelled to select some form of the hive, I found that those who had used the Stewarton claimed to have obtained results which certainly were not surpassed, even if equalled, by others who had confined themselves to the straw skep or the ordinary bar-frame. Three years' trial of this hive, in conjunction with other kinds, has convinced me that its merits are very great, and that it only requires to be better known to be more highly appreciated. Notwithstanding the able advocacy of 'The Renfrewshire Bee-keeper,' the hive which he has made almost his own, or, at all events, has vastly improved, is seldom seen across the border; and even persons in England who have adopted it are not all of them aware how best to manage it. I trust, therefore, that I may be able to contribute something towards the advancement of bee-keeping by dwelling in detail upon the Stewarton Hive.

The subject of my paper derives its name from the town of Stewarton or Stuart-town, in the north of Ayrshire, on the borders of Renfrewshire. It is said to have been invented about the year 1819, by a cabinet-maker named Robert Kerr, of that place, a man as remarkable for his skill in bee-keeping, as in the secrets of his particular trade. 'Bee Robin' was the nick-name given by his neighbours to Robert Kerr, and we can well imagine that his skill as a workman assisted him in no slight degree in improving the form of the wooden boxes in which he kept his bees. The octagonal form of the Stewarton hive was without a doubt known before Kerr's time. 'The Renfrewshire Bee-keeper' informs me that its invention is generally ascribed to the Rev. William Mewe, minister of Eastlington in Gloucestershire, about the year 1652. In April, 1675, John Gedde obtained a patent from Charles II. for his octagon boxes. They appear, however, to have been used in Scotland with good success before that date. These octagons consisted simply of a series of boxes of uniform depth, with a 5-inch square central hole in each top. Robert Kerr seems to have introduced the moveable slides of wood working in grooves in 1½ inch bars on the top of what are called the body boxes. Of late years various changes have been introduced by 'the Renfrewshire Bee-keeper,' so that the hive, as sent out by the makers at Stewarton, is as follows:—

There are one, two, or three breeding or body boxes, octagonal in form, about 14 inches wide inside, 7 or 9 inches deep, and having eight bars, the six in the centre one inch and an eighth broad, the two at the ends where the honey is stored 1½. The bars are secured by ½-inch brass screws, and are supposed to be removeable at pleasure, though sometimes they require a sharper wrench than seems desirable. The screws, however, need not always be fastened, and, like screws of another kind, their absence is often better than their presence. Frames are added to the four centre-bars so that combs may be interchanged just as in ordinary bar-frames. The sides of the boxes are dovetailed, and if the boxes are accurately constructed, as I have always found to be the case, they fit exactly one upon the other. There is a window with a moveable shutter on the back and front of each box, wooden buttons on each to keep the boxes together, handles for lifting, and also hooks or screws for lashing the boxes; but these I have never found occasion to use, the buttons answering every necessary purpose. In each box is an entrance 3½ inches wide, and half an inch deep, with a sliding piece of wood for closing or contracting it. Experience has proved that three entrances are none too many if the hive is prosperous and the weather warm; but in cold weather one will be found sufficient.

In addition to the breeding or body boxes, supers or honey-boxes are also required. These correspond in width with the other boxes, but they are 4 inches only in depth, and are each furnished with seven bars, 1½ inches broad, whereas the central bars of the body boxes are one inch and an eighth only. The shallowness of the supers, the thickness of the combs, and the additional depth of the cells, all tend to deter the queen from converting these supers into breeding-boxes. The number of honey-boxes required for each Stewarton set is somewhat uncertain; my Stewartons this season have been made up of three body and four honey-boxes or supers, but probably the best Stewarton super exhibited last year was obtained, I believe, from a single body-box. Very much, of course, depends on the season and neighbourhood; but I may say that I do not at all despair of filling six, eight, or even ten honey-boxes placed on the top of one Stewarton hive whenever we have a favourable season.

Besides all these boxes, the wood of which is only five-eighths of an inch thick, an outer covering of some kind or other seems to me to be absolutely necessary, and the cost of the hive is thereby increased. This covering, like the hive itself, must be capable of expansion or contraction. Mine consists of two or more cases, each about 19 inches square, 11 inches deep, with a rim 2 inches wide fastened round the bottom, so that it fits on to another case. A moveable top will also be required, and one of the cases must have a wide opening at the bottom for the admission of the bees. In this case the rim must not be added on the side where the opening is made, so that the case may fit the floor-board. The floor-board should be also 19 inches square, with a projection in front slightly sloping outwards that the water may run off. Two cross pieces of wood should be nailed at the bottom of the floor-board to keep it from warping, and protect it from the damp. 'The Renfrewshire Bee-keeper' recommends 'an outer octagon case, with a nicely-bevelled roof and an ornamental vase on the top;' but the moveable cases of square form fitting into each other are very convenient, as you can easily remove them if you wish to inspect the boxes. My bees, moreover, were hanging by thousands near the end of June at night-time, when the weather was very warm, between the inner octagons and the outer case, although the three body-boxes and the four supers were full, and in this way the outside covering forms an important protection against that bane of a bee-keeper's life—I mean the tendency of the bees to swarm. These cases can also be used to protect ordinary bar-frame hives constructed with a single wall, and if, as I have found necessary, three tiers of sectional supers are

on at one time, a second case can be added above the first with a moveable roof to crown the whole.

Having now our breeding and honey boxes, and also our outer cases, we may proceed to fill our hives with bees, and see how this complex system works. In a famous passage quoted from the *B. B. J.*, vol. i. page 14, in Mr. Hunter's book, 'the Renfrewshire Bee-keeper' has described the general method of manipulating the Stewarton hive. His system of combining swarms deserves close attention on the part of those beginning bee-keeping. I do not, however, propose to repeat what he has written, but will give you the history of my latest Octagon.

At the end of June last year, I placed a swarm in a body box on a platform about nine inches from the ground, in the hope that I might be able to add a second swarm within a few days, as recommended by the writer to whom I have referred. The weather, however, was so unpropitious, that no swarm came, and moreover I was compelled to feed the bees. This was done by cutting one of the central slides, and drawing one of the pieces out some little distance. Above the hole I placed a feeder, made by Messrs. Green & Sons, of Rainham, Kent, recommended to my notice by Mr. Cheshire, whose recommendation I can thoroughly endorse. Over this box, when winter approached, I placed a square case, adding dry fern between the hive and the case, covering the top also with fern. Thus the bees were kept both warm and dry. For months they were left almost unnoticed, until the fine weather on March 1st enabled me to examine them, when I found that they still had food in abundance, and were evidently thriving. Soon a second box, with combs already constructed, was placed below the first, the slides from the top of the second box were all withdrawn, so that the bees could readily enter their new apartments, and slow feeding was commenced.

Ere long the population increased so rapidly that I placed a honey-box fitted with guide-comb on the top, [illegible] two outer slides on either side of the [illegible] rkers to deposit their [illegible] writes 'the Renfrew- [illegible] uccessful management [illegible] ce of the wants of the bees. The op[illegible] ter side of the box, occasioned by the withdrawal of the slides, were stopped by the wooden pegs made for the purpose. If the outer slides only are drawn, the queen will not, as a rule, enter the honey box; nor have I found any occasion for queen or drone excluders, as in the ordinary bar-frame. 'The Renfrewshire Bee-keeper' asserts that he never found eggs laid in a honey-box, so effectual is this simple plan of drawing the slides only where the honey is stored.

This honey-box was fastened to the body-box by the wooden buttons mentioned before, and thick paper was also gummed or pasted over the part where the boxes meet, so that air was excluded, and the heat of the hive increased. The super was carefully covered with flannel or old carpet, so as still more to raise the temperature, and induce comb-building. The bees at once occupied the super, and no great interval elapsed before white comb began to approach the windows. It soon became evident that more room was wanted; a third body-box, with the frames filled with foundation-comb, was added below, and all the slides between the body-boxes withdrawn; then three more honey-boxes were added above, and three entrances, one in each box, allowed to the bees. Thus my seven-inch box had grown to a height of more than three feet; at the end of June it was full from top to bottom, though we had had very little honey from the apple-blossom; large clusters of bees, moreover, were hanging between the outer cases and the inner octagons whenever the nights were very warm, and I entertained a sanguine hope that I should obtain an enormous harvest from a single hive. But the incessant rains of July and the loss of the lime harvest occasioned by unending wet weather, prevented the fulfilment of these anticipations. Nevertheless, I was rewarded with 70 lbs. of super honey in addition to the contents of one of the breeding boxes. I may add that my other Stewarton, treated in a similar manner, gave me a very similar result. Some of the boxes from these two hives were shown at South Kensington, St. Albans, and Boston, and won four prizes. In 1878, the first year I tried this special hive, I showed a honey-box on two occasions, and won two prizes.

This brings me to another feature of our subject, I mean the extraordinary harvests which the friends of the Stewarton assert it has secured. 'The Renfrewshire Bee-keeper' tells us that in the year 1868 he had ten octagon supers from one hive, and obtained 164 lbs. of super honey in addition to 30 lbs. in the body-boxes. Mr. Briscoe, of Albrighton, Wolverhampton, has put the fact on record, that in 1876 he had obtained 144 lbs. of the purest super honey from seven octagon boxes by August 6th, and that after the supers were removed, the three body-boxes weighed over 70 lbs. A second set of boxes, fitted with an artificial swarm, yielded 75 lbs. of equally pure virgin honey-comb.

The eminent Scotch bee-master, to whom I have so often referred, obtained nine octagon supers in that year from one hive, and eight from another. In 1878, a very poor honey year, he obtained over 80 lbs. of super honey; and a Scotch parish clergyman, we are informed, from eight octagon colonies secured 445 lbs. of the purest comb, entirely free from pollen, brood, or the slightest impurity. One colony contributed 92½, the next best 88 lbs.

Mr. Briscoe, in the March number of the *British Bee Journal*, 1878, has given an interesting account of his Stewartons for several years in succession, in which he also tells us that in his own case a good harvest from the Stewarton is the rule rather than the exception. And some of you may remember that last year a distinguished member of our committee was able to show a beautiful Stewarton box, one of the very few good exhibits of 1879, which he obtained during a short spell of fine weather, while the lime-trees were in blossom.

A hive, then, that has secured such remarkable results, must have features connected with it of unusual merit, and on these I shall now venture for a while to dwell.

1. First and foremost comes the remarkable power possessed by this hive of expansion and contraction, and consequently the ready prevention of swarming if the bee-keeper does not wish his bees to swarm. The prize octagon of last year to which I have alluded was obtained from a single body-box, yet sometimes as many as ten supers, each 4 inches deep, three body-boxes each 7 inches deep, and an eke below of 2 inches, are employed, though not necessarily all at one time, as the lower supers when completed may be removed and empty boxes substituted on top. The first super, or, at all events, some completing super, should remain until the end of the honey-harvest, as the queen, should she pay a visit to this portion of her domain, will return, finding every cell filled with honey, and no opening therefore left for her energies. The outer case protects the hive itself from the sun, and this fact again lessens the chances of swarming. By altering slightly the position of the moveable top, a current of air will in the hottest weather be created, and the three entrances will still still further tend to cool the hive. Those who have tried the Stewarton assert that the bees very rarely swarm if room above and below is given in due time, whereas in the ordinary bar-frame the tendency to swarm is often irresistible in spite of every effort that can be employed.

2. Secondly, this hive is essentially the hive of the busy man, as satisfactory results can be secured without

the expenditure of the time and trouble required by the ordinary bar-frame.

From one of my bar-frames this year obtained more than 70 lbs. of super honey; but the trouble it demanded was at times excessive. Every section required some guide comb; to cut out and fix this comb in seventy sections must cost well-nigh seventy times seven minutes. When the sections were on they evidently were in want of something to bind them together and exclude the air, so that at each junction we pasted or gummed some paper. The time this cost would not be difficult to calculate. The numbers soon increased so rapidly that, in spite of three tiers of sections, swarming seemed imminent. All the supers were therefore taken off, and the hive examined. What infuriates the bees more than the removal of their honey? The task of cutting out queen-cells under such circumstances demands time as well as courage, and so I found. No cell was discovered inside the hive, but on examining the sections we came upon unpleasant traces of the queen, as well as a queen-cell. Thus the sections each required inspection, until at last I exclaimed, in spite of a splendid harvest, 'Le jeu ne vaut pas la chandelle.'

A very busy man must, in my opinion, avoid the ordinary bar-frame, whereas he may succeed with the Stewarton.

3. Thirdly, the Stewarton winters well if only ordinary and proper care be taken. The thinness of the crown-board, a quarter of an inch only, is advantageous in summer, as it allows the heat of the hive to enter the honey-box, and in winter permits the moisture to evaporate. Hitherto I have not withdrawn the slides in winter, but henceforth I shall follow with one or more of my octagons the advice of the Renfrewshire Bee Master, draw the slides entirely out, and over the top of the hive fasten some Indian matting, securing it with tacks to keep it straight. Under this matting I shall put some flour-cake, above and around dry fern or chaff, protected from the wet by the outer case, so that the bees within will be warm and dry, and probably breed through some portion of the winter. It has been said that the octagon shape is superior to the oblong for wintering, that in the ordinary bar-frame some of the frames at either end should be removed to prevent mouldiness, whereas nothing of the kind is required in the Stewarton: that the octagon shape gets rid of the awkward corners; that the small size of the Stewarton box enables a higher temperature to be maintained with less difficulty than in most of the ordinary bar-frames; and that the massive honey-comb at either end of the breeding-box tends to keep out the cold. In a very able and interesting article entitled 'The Philosophy of Hive Shape,' which appears in the *British Bee Journal* of September, 1874, Mr. Cheshire has assailed the first assertion; and I am not prepared to controvert his views. But I am expressing not only my own, but also the opinion of others better fitted to form an accurate judgment, when I say that the bees will pass the winter well in a Stewarton Hive properly managed.

Now let me put the other side of the question. Objection is made to the slides, which are often difficult to move or remove. Again I venture to quote Mr. Cheshire, who has suggested that a little tallow added at intervals will make them run more smoothly: a small screw-driver at one end, and a pair of pincers at the other, will always solve the difficulty. A heated iron applied to the slides is also said to be sufficient to loosen them.

Another and a formidable objection is that the large supers are sometimes unsaleable. If even every bee-keeper desired to obtain honey for the purpose of selling it, the objection would have weight, but some of us do not. It happens in many cases that articles in universal demand are at times unsaleable, because the right means have not been employed, or sufficient trouble taken. If proper jars be used, if the agents and experts of this Association exert themselves for the members, as I trust they do, and will, I cannot but think that honey of the purest quality will find a ready sale. 'The Renfrewshire Bee-keeper' tells me that he has been accustomed to receive 1*s.* 6*d.* per lb. for his honey, and that in 1878 he obtained 16*l.* for surplus supers.

Another objection brought against the Stewarton is its costliness. No doubt a set of octagons, with the floor-board and outer cases, costs more than a simple bar-frame, but for my own part, I have not yet come upon a cheap bar-framed hive that has produced great results.

Body-boxes can be obtained from Stewarton at 5*s.* 3*d.* each, or 15*s.* for three, honey-boxes for 2*s.* 6*d.* each, a floor-board for 1*s.* 6*d.** Thus 1*l.* 6*s.* 6*d.* will provide three body and four honey-boxes, and an amount of accommodation sufficient for the most prosperous stock. If you are also to have an effectual outer covering, you will require two cases at least of the size I have named, as well as a moveable roof.

My carpenter's† charge for two outer cases with the roof, each with three coats of paint, is 13*s.* The total cost of the hive and cases will thus exceed 2*l.*, as carriage from Scotland must be included; but this sum comprehends almost if not everything that can be desired.

For purposes of manipulation, of interchange of frames, for use of the extractor, for the production of marketable sections, it must, I think, be admitted that the ordinary bar-frame has the decided advantage. Any one who wishes to become an advanced and skilled bee-keeper will never be without bar-frame hives, provided only he has the time to spare as well as the patience.

In conclusion, I may say that few things are more pleasing to me as a bee-keeper than to watch a prosperous Stewarton on a fine summer's day. The roar of the myriads of bees rushing to and fro resounds far and wide; the air is filled with their merry music, and as they disappear in the distance, the mind travels with them, and wonders what fields they will traverse, what flowers they will visit before they return. Life to them seems full of joy; they are seeking the sweetest of all created things, they wander only in pleasant paths, and in doing good to themselves diffuse fertility and new forms of life everywhere around them. As the day declines, they return to their home, teaching us day by day the lesson that so few of us are willing to learn, that while we must not be over anxious about the future, yet that in spring and summer we must prepare for the autumn and winter; that however bright the sun may be to-day, we must not forget the duty of providing and preparing for the future, as the Great Ruler of the Universe may grant us opportunity.

[The discussion on the above paper we reserve for our next issue.—Ed.]

WEST KENT BEE-KEEPERS' ASSOCIATION.

The annual meeting of the above Association was held on Wednesday evening, Nov. 17, at St. Mary Cray; the Rev. Andrew Welch was in the chair, and there was a good attendance. Mr. Cheshire explained in his usual able and interesting manner the different and peculiar methods in which the bee entered the various flowers in search of honey, and also for the purpose of fertilisation, which, in many cases, no other insects were skilful enough to succeed in doing. The speaker also showed, by several experiments, the manner in which the bee secreted the honey, and converted it into wax, explaining the peculiar formation of the insect's thorax and stomach. The Chairman then reported the progress which the Association had made since the last annual meeting; an

* These prices have been obtained from Mr. J. Allan, Stewarton.

† Mr. J. Matthews, Castle Street, Berkhamsted.

important branch having been formed at Bromley, which he hoped before long to see one of the most successful bee-keeping districts in the country. Dr. Beeby, of Bromley, contributed greatly to the interest of the proceedings by exhibiting, through the microscope, various parts of the bee; demonstrating clearly the accuracy of Mr. Cheshire's theories. Mr. Baldwin, an expert of the Association, gave encouraging information respecting practical and profitable bee-keeping. A draw by the cottagers for a bar-frame hive resulted in favour of Mr. John Tough, sen. A number of ladies and gentlemen contributed both vocal and instrumental music during the evening, their efforts to entertain being fully appreciated, and altogether an exceedingly instructive and enjoyable evening was spent. Information can be obtained by intending members upon application to Mr. Soames, of Ravenscroft, Mason's Hill, Bromley.

THE CONGRESS OF BEE-MASTERS AT COLOGNE.

(*Concluded from p.* 143).

The distribution of prizes by the chief Burgomaster took place in the Victoria Hall on Thursday morning, the 9th September. Mr. Vogel received the gold medal of the Ministry of Instruction, and to Mr. Gravenhorst was awarded the gold one presented by the city of Cologne. Then followed the presentation of the ten silver medals granted by the State. When my name was called, and I advanced to the table as the others had done, I felt that I was then a representative Englishman, and took my medal from the hand of the dignified Burgomaster. On returning to my seat I was warmly congratulated by those near. Next followed the five silver medals of the city of Cologne. Mr. Dennler carried off one of them. The Silver Medal of the Rhenish Westphalian Bee-keepers' Association was won by Mr. Thoelke, estate-proprietor of Alvern, for a colony of Luneberg bees. Then followed ten first class Diplomas of Merit. After this ten bronze medals by the City of Cologne for different exhibits severally named. In addition to the above, a large number of Diplomas of Merit and money prizes were awarded, which, of course, cannot all be enumerated here.

I must not omit to say something about the lottery tickets, which were freely sold at half a mark (6*d.* each) during the Exhibition, and the successful winners received their allotments. I took some tickets, but the numbers were not among the fortunate ones. The law of England does not allow of lotteries, so we shall not take pattern in this respect. There is one thing to be said in favour of them, and that is, that a great many exhibits were purchased that otherwise would not have found a customer.

In closing the meeting, the chief Burgomaster proposed three cheers for His Majesty the Emperor, which was heartily responded to; and we, bee-keepers, separated to meet again on board the steamer, which had been hired to take us to Rolandseck to enjoy an excursion on the Rhine. We embarked from the quay in goodly numbers; and had on board Dr. Dzierzon, Baroness Lina Von Berlepsch, Herr Vogel, Mr. Schmid, editor of the *Bienen Zeitung*, Count Pfeil, Pfarrer Rabbow, &c. Our vessel was gaily decked with flags, and as we steamed along with our band of music, we were the objects of repeated salutations.

Rolandseck is a pleasure place beyond Bonn. Arrived here, we marched in procession (headed by the band) to what is called 'The Beer Gardens,' where some partook of light refreshments, and the greater number strolled to the heights overlooking the Rhine, visited the ruins of an old castle, sang some national songs, and returned to the steamer as the shadows of evening were drawing on. Our return voyage was commenced amid the booming of cannon, burning of coloured fire, and the hurrahs of the lads and lasses of the village. To relieve the tediousness of our homeward journey in the darkness, some of the active members of the Committee provided a bowl of punch in the well-lighted cabin of the vessel. Under its flowing influence many eloquent speeches were made. One young lady, of prepossessing appearance, delivered a very animated address; not so much under the prompting of the flowing bowl as that of a young gentleman who sat near and refreshed her memory from notes whenever she was at a loss for a word. The speech was evidently prepared, and made a great impression on the company, her utterances being constantly cheered with the cries of Bravo, and at the conclusion, all that could do so anxiously stretched forward to clink glasses with her. I understood that the subject of the young lady's discourse was to show the many excellent lessons and examples that may be derived from the study of bees and bee-keeping.

One gentleman, who was very active on the Committee, proposed a toast in honour of England (or Fair Albion I think he said) in very flattering terms, and as I was the only English exhibitor present, the company paid me the honour of touching glasses, &c. Thus terminated a very pleasant day, and a long-to-be-remembered visit to the Cologne Bee Meeting.

On my mentioning to a gentleman on the Committee my admiration of the excellent way they had managed the arduous duty thus devolved upon them, he replied, 'We have done our best, and no one can do more.' He also told me that the expenses were something over 300*l.*, and that 100*l.* was granted them by the State.

After the close of the Exhibition, my friend and myself (for I was accompanied from London by Mr. S. Stutterd, of Banbury, who is conversant with the German language) spent a day at the Düsseldorf Exhibition, which was exceedingly interesting. There was a large collection of paintings, and iron-work, with engineering generally, was well represented. We found nothing on show appertaining to bees, but met with many of our bee friends, who, like ourselves, had come over from Cologne (the distance is about twenty miles by rail). Amongst them we fell in with the Baroness Von Berlepsch, accompanied by Mr. Schmid, of Eichstadt, and some others. That night we returned to Cologne, and next day started on a tour, partly pedestrian, into the adjacent country districts in order to obtain some insight into the mode of keeping bees in Germany.

Our first call was on Mr. A. Schlösser, at Ehrenfeld, near Cologne (to whose exhibits at the Show reference has already been made). He is a fruit-grower on a large scale, as well as an apiarian, and has a commodious house and garden. On applying at the door, my friend asked for Mr. Schlösser, explaining that he had called to see his apiary. The maid-servant asked, 'Are you Bienen Brüders?' (Bee brothers) to which a reply was given in the affirmative. By her manner, we perceived that we had struck 'a key-note,' for she hastened to tell her master of the two strangers 'that stood before the gate.' Mr. Schlösser shortly appeared, and at once conducted us to his bee-house, and politely gave us all the information asked for. His bee-house is in the form of a cross having four doors. Each one of the four wings projects nearly 11 feet, and is the same in breadth, which, adding the space of the interior, gives a diameter from door to door of nearly 33 feet. One half the space of the interior is required for the necessary manipulations; the other half to the right and left is occupied by the hives. The first shelf is about two feet from the ground. The second tier is the same distance above, and the third is also two feet higher. The hives are 'Mehring's' twin frame-hives, and of much the same construction as Dzierzon's. Each shelf accommodates

four twin stocks, so that openings are cut in the boarding for eight entrances, thus there are twenty-four colonies on each of the eight sides. The house therefore holds, when filled, 192 hives of bees. At the time I was there many hives had been sent to the moors, consequently only a few were at home. The house is of wood, closely boarded, and has a tiled roof. There is no admission of light except when the doors are thrown open. The hives open at the back, and are thus easily manipulated, without molestation by robber bees. Exit for any bees that are outside the hives is found through the open door. There is plenty of space to work the extractor in the centre of the building. On inquiring if there was an apparent difference in the prosperity of the hives in the various aspects, Mr. Schlösser said that those exposed to the afternoon and evening sun, which induced the bees to fly out again, are placed in the most unfavourable position, but that as long as the entrances are not exposed to the direct rays of the sun, it makes no difference whether they face north, south, east, or west, and that the only drawback that he finds to his 'Pavilion,' is that the colonies are placed in too close proximity when quite filled with stocks, which causes the loss of many queens on their return from their wedding flights. This is an objection that might be expected, and favours our English plan of keeping hives on separate stands in the open. The German arrangement has an advantage in being able to keep a large number of stocks in a comparatively small space, and also secures them from the depredations of thieves. Mr. Schlösser regaled us with Rhine wine, mead, grapes, &c., at his house, and showed us the medals that had been awarded him.

I left with him a copy of *Modern Bee-keeping*, which he said his brother would translate. We took our leave and proceeded to Düren. Here we called on an exhibitor of honey, but did not visit any bee-keepers in that town. We then proceeded to Nideggen, which is situated amongst picturesque scenery, and afterwards to the town of Zülpich, where there are several apiarians.

One of them, Mr. Schmid, who follows the occupation of a tanner, and on whom we called, received us very courteously. Learning that we wished to see the mode of keeping bees in that locality, he not only showed his own, but escorted us to two or three others. Here, also, many hives were away at the moors. The bee-houses were mostly simple sheds, not closely boarded, but well secured from robbers, with spaces for twelve, eighteen, or twenty-four, as the case might be. There were generally three rows, one above the other. The hives were the usual sorts that are kept in Germany, and which have been before described. Mr. Schmid saw us off by the train, and on my companion apologising for taking up so much of his time, he replied, 'We can work *every day*, but could not have the pleasure of receiving visits from English bee friends *every day*.'

We went by rail to Aix-la-Chapelle, thence on to Brussels, where we spent a day at the Exposition, but failed to find any exhibit in the bee way. I never heard that the Belgians bestowed much attention on the production of honey. The Exposition was, however, an exceedingly good one, and well worthy of a visit.—Alfred Neighbour, *Regent Street, London.*

Bee-killing with a Vengeance.—A 'Zummerzet' bee-keeper near Frome has hit upon a new way of getting rid of robber-bees. He sets box-traps baited with enticing syrup to tempt them to enter, and when they are thick upon it crushes them. In this way, he boasts, he has destroyed 'packs' of bees. His own apiary is in a very impoverished state, and he cannot be persnaded but 'it's the robbers wot's done it.' When he has succeeded in so reducing his colonies, that they will die out entirely, the robbers will doubtless get blamed, for the simpleton cannot believe that he is trapping his own bees.

Correspondence.

*** *These columns are open to subscribers, so that their queries, replies, correspondence, and experiences may be* fully and faithfully *recorded; and for the discussion of all theories and systems in Bee-culture, and of the relative merits of all hives and appurtenances, that the truth regarding them may be ascertained. The Editor, therefore, must not be expected to coincide with all the views expressed by the various writers. All Correspondence is addressed to the Editor.*

ABBOTT'S FOUNDATION ON WOOD.

Generally, when anything new is introduced, and it promises to be of use, there are a number of persons ready to claim it, or, at any rate, claim that they have been working at it with a view to its perfection previous to taking out a patent. Although this often occurs in England, it is notoriously so in America, and I have repeatedly observed that our American friends have a great reluctance to give any but their own countrymen the credit of introducing a new invention, and that if ever such an invention is brought out in any other country, they forthwith claim to have tried the thing years ago. Now in the case of the wooden foundation, although you may not have been the original inventor of it, you have, so far as I know, been the only one who has worked at it to bring it to its present state, therefore you are entitled to the credit of introducing it. I have searched the *Bee-keepers' Magazine* and *Gleanings* from the first number to the present time, also the *American Bee Journal* from 1875, and fail to find any mention of foundation on wood previous to yours. *Palmam qui meruit ferat.*

The first comb-foundation on wood which I had seen was exhibited at South Kensington last year by Mons. Demler. This he presented to me, and I have it now in my bee museum. Its total thickness is $\frac{3}{8}$ of an inch, the septum being a board an $\frac{1}{8}$ of an inch in thickness, coated on both sides with wax, and passed through an ordinary foundation-machine. As the cells are not flat-bottomed, there is an enormous waste of wax, and such foundation could never be of any use, owing to its expense. In the early part of this season, you sent me a frame of foundation, which you had made with flat-bottomed cells. The foundation was a board $\frac{1}{16}$ of an inch thick, which had been coated with wax, and passed through rollers, but in such a manner that all the wax had been pressed out, leaving the bases of cells bare, and only the thick cell walls of wax projecting from the board. This was introduced into one of my hives and examined the next day, when I found that instead of elongating the cell-walls, the bees had carefully nibbled off the wax from the wood, and had built projections at right angles to the septum, and on these had started pieces of comb in an irregular manner on both sides.

You subsequently wrote to say that you had experienced a similar result, and that you had improved the foundation by leaving on the wood a sufficient covering of wax for the bases of the cells. I also received at the same time two sheets of your improved wood-foundation and flat-bottomed wax-

foundation. The wooden foundations were fitted into frames, and inserted in hives on the 2nd June, and examined next day, when I found them well started, and they certainly showed a very great improvement on the first I had. One of the frames has been worked out to within $\frac{3}{4}$ of an inch of the sides, and has had brood in it all the season; and the only difference in this and the ordinary foundation that I can see is that the bees do not extend the cells to the full length quite to the outside of the frames. The brood was as healthy, and the bees hatched out as strong, as those on any other sort of foundation. There is a defect in the sheets I have, but this can be easily remedied in the manufacture, and it is that the impressions of the cells are not distributed with the same geometrical accuracy as on some other foundations. In some parts there are $5\frac{1}{2}$ cells to the inch, and in others only $4\frac{1}{2}$. Where these irregularities occur, the bees have started in many instances three cells, and as they lengthened out the walls, they converted them into two cells. This, I presume, is owing to a fault in not engraving the rolls with sufficient geometrical precision.*

This style of foundation, I think, will be useful where the extractor is used, as there would be no risk of breaking the combs, however rapidly the machine were driven. It must also be of great service to those who send their bees to the heather, as there certainly would be no risk of combs breaking down.

The flat-bottomed wax-foundation was tried in the following way: One sheet was fixed to the top bar of frame by running wax from a smelter on both sides, and the other one was fixed in with the Cheshire fixers. They were both examined next day, and I found them both started. The fixers were removed, and since then both combs have been worked out and bred in several times. They are as straight as can be desired, and there has been no sign of buckling in either of them. I hope next year to be able to make further experiments on a larger scale both with the wooden and the flat-bottomed foundations.

I have had opportunities this season of examining combs worked on the wired-foundation, and I must say that they were anything but satisfactory. I do not know how the tinned wire may act upon the grubs, but the wire in the foundation introduced into this country certainly has a deleterious effect upon them.

There was a strong stock of bees exhibited in one of your observatory hives at Windsor. The combs were beautifully filled with brood, but you could trace the line of every wire in the foundation, for wherever the base of the cells touched the wire, the cell was empty. Of course a number of empty cells in each comb reduced considerably the breeding space in a hive. I also had the opportunity of seeing the same thing on a larger scale in Mr. Cheshire's apiary, and I should like to know if others who have used wired-foundation in this country have experienced similar results. I understand that you are wintering some stocks on your wooden-foundation, and look forward with interest to your report in the spring.—T. W. Cowan, *Comptons Lea, Horsham, Nov.* 19, 1880.

* The fault was not in the rollers, but arose from want of experience of the tricks such things will sometimes play. One would think that between two high-pressure rollers, deeply cut as those in question are, the 'bite' on the dipped wood would be sufficient to take 'the pride' out of it, and force it to receive a correct impression, but in practice it is not so. It was (and is) necessary that a coating of wax should be left on the wood at the base of the cells (or as our esteemed correspondent proves, the bees would not work upon it as they ought to do), and that was the cause of the difficulty. The rollers had to make their impression in the wax, on wood that they did not touch, and they did their work well so long as there was exactly the right quantity of wax upon it; but when there was an excess, it accumulated in rear of the rollers, and formed cushions on both sides of the sheet that retarded its progress; and though the rollers formed the cells correctly, they delivered them a little faster than they delivered the wooden base on which they were made, and thus they became a little crowded, and in one direction were not of correct dimensions. To obviate this, our expert assisted the rollers by pushing the wood from the rear, and occasionally overdid it, sending it in advance of the cells, and dragging the latter slightly before their delivery from the engraved mould which formed them, and hence they became a trifle too large. 'Experience teaches,' however, and while it has enabled us to overcome the difficulty, it has taught that bees will accept an imperfect article, and 'make the best of it,' even though it be flat-bottomed foundation with a wooden basis; and when bee-keepers rise above their prejudices, and learn not to condemn a thing because it is new, perhaps they will accept it too. Regarding the wired-foundation, we can only repeat an oft-told fact that we have never been able to try it, having disposed of all we had ere becoming aware that no more was forthcoming.—Ed.

KELSO SHOW.—COWAN'S RAPID EXTRACTOR.

My attention has been drawn to a letter in last month's *Journal* from Mr. R. J. Bennett, who says 'that Steele of Fowlis writes to him that he had never seen "Cowan's" extractor when he invented his own;' and he further states 'that there is a description of his in the British Bee-keepers' Association's new book.'

The 'Rapid' extractor illustrated and described in British Bee-keepers' Association's book was invented and introduced by me in 1875. It is twice described in the *British Bee Journal* of that year, and illustrated. It was also described and fully illustrated in the *Journal of Horticulture*, and has been described in a great number of papers both here and abroad, and in all the American Bee Journals. It has been constantly before the public since that time. Mr. Lee advertised it every month in the *Bee Journal*, and it has been described and illustrated in *Hunter's Manual* and other bee books. Lastly, the block of illustration of the 'Rapid' extractor was lent by me for the British Association's Bee Book.

The invention has been freely given to the public. Any one is at liberty to make it, and any manufacturer may make and sell it; but I do not think it right he should pass it off as 'his' invention, but should be satisfied with deriving the profit without the credit. Mr. Steele has for the first time made and shown an extractor at Kelso similar to mine (and known as 'Cowan's Rapid' extractor),

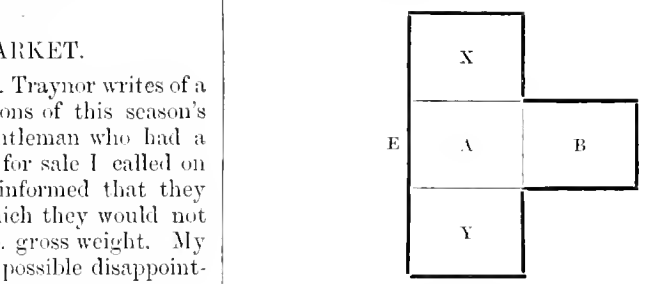
and is, therefore, not entitled to any credit in introducing an invention which has already been before the bee-keeping public for such a length of time, and of which I am the sole inventor. *O imitatores! servum pecus.*—THOS. WM. COWAN, *Comptons Lea, Horsham, 23rd Nov.*, 1880.

IRISH HONEY-MARKET.

In your September issue Mr. J. Traynor writes of a Dublin firm requiring several tons of this season's honey. In the interest of a gentleman who had a large quantity of section-honey for sale I called on the firm referred to, and was informed that they only bought skep-honey, for which they would not give more than 4*d.* to 5*d.* per lb. gross weight. My object in writing is to prevent possible disappointment to your readers.—ROBERT SPROULE.

HIVES FOR CONVENIENCE.

Will you kindly give me your opinion on the hive I am about to describe and say what you see against it? To a person engaged in business it makes some difference to be able to manipulate your bees and examine your sections quickly, and what I propose hereafter is with that view. Take a Woodbury Standard to be the hive on the plan of your Irish hive, with entrance at E, say A to contain ten frames for the brood-nest, B other frames, six or eight or ten as the case may be holding sections. Let a division board K run through with a slit in the bottom of it, say eight or ten inches long, same size as the one at the opposite end of hive, for allowing the bees to go in and out, and fit to the same two slides like those in your good hives, only allow them to come through the hive so that they can be pulled out or pushed in from the outside. When the brood-nest A is full, and you want your bees to work in the sections in B, you just go to your hive and pull out these slides, one at each side, and then the bees can run in and work. Inside along the bottom of the division board K a piece of excluding zinc should be fixed to keep back the queen and drones. Well, when you want to examine the sections, in place of waiting to make all the bees quiet in the hive, just go and push the slides into K, and then you have only those to deal with that are in the department B; well, have one or two slits, say one at each side of B, the same as at front of hive, say six inches long, with slides attached, and open these and let the bees go out when done with the sections, which I suppose they would soon do; and have outside each slit a bee-trap so that although the bees could go out they could not return. It seems to me that if this plan would do it should save a lot of time, and when one was busy and yet wanted to examine the sections, by thus dealing with a number of hives they would soon be ready for examination, and one might be doing something else the meantime. In order that the bees should not be idle at such a time, or A be overcrowded, I would have a crate of sections over the ten frames in which they could work or amuse themselves until allowed into B again, or, if this plan suited, one could have sections on each of three sides of the brood-nest—X, Y.



From your experience I am sure you will be able to point out the defects in this system, and hope I am not intruding on your valuable time.—A. DAVIS, *Limerick, Nov.* 9, 1880.

[We have not a word to say against the principle of the hive, since it embodies the chief features of our Royal Standard hive, for which first honours were awarded at Kilburn and other shows in 1879, but some of the details will bear discussing. The advantage of a long hive having entrances available at will on all sides of the hive is self-evident, and our Cottager's hive at Kensington this year was so provided, since it can be divided and made available as a twin hive, or, as our correspondent suggests, can be increased in size by the addition of side boxes—equivalent to the collateral spaces in our Royal Standard (p. 113, vol. vii.) The division board K being a fixture is of questionable value, a divider, or, as it is more often called, 'a dummy,' is a necessity in such a hive, but it should be moveable that the capacity of the brood department A may be regulated to the requirements of the colony, or the exigencies of the season, and therefore the entrance-way from A to B would have to be independent of the hive sides, and controllable from above. The value of the side slits in B, as a means of escape for the bees and effecting the easy clearance of the sections, may also be questioned, since the bees, being used to the passage through the division board K, would crowd towards it when alarmed, as they would be if it were suddenly closed. A better plan would be to force some smoke into the back of B to drive the bees forward, and when the majority have left B to close the passage through K, and operate at once while the intellect of the bees is beclouded. We have not much faith either in the position of the receptacles X and Y, and would prefer, if increased space be necessary, that they should be put on either side of B instead of A, as being more in accord with the known principle of bee-secretiveness.—ED.]

FEEDING AND BREEDING.

I am greatly obliged for your reply to my question. One of our most advanced apiarians (in Derbyshire), to whom I afterwards mentioned the matter, informed me that he considered that one reason of non-autumnal breeding was the much colder climate we have compared with your own; and another, the *lack of flowering pollen plants* in this neighbourhood. If this is the case, it proves the wisdom of the little creatures who know their own business best, and who in seven cases—my hives only number seven!—

refused to breed, though tempted to do so by slow feeding. I may, however, mention that I did not begin to feed early enough—*i.e.*, just when the honey harvest was over. Is that possibly the reason?—GOOSEQUILL.

[We have many times observed that suspension of breeding is almost sure to result from cessation of income, and have repeatedly cautioned our readers on the very point raised by our correspondent in the last paragraph of his communication. Once discontinued (particularly in autumn), it is very difficult to induce the bees to renew the nursing business; the queen will quickly respond to the heat-creating process of feeding, and will lay eggs freely, but the bees, having got 'out of the groove,' do not seem to care to take up the burden again. Coldness of climate and lack of pollen plants may have an effect, but that they do not stop breeding, is evidenced by the fact that we have often found bees breeding heavily during severe frosts, when, as a matter of fact, we had bees dubious of their being able to maintain themselves. We do not consider midwinter breeding a *healthy* sign, but we prefer that the bees remain perfectly quiet until the crocuses show their beautiful blossoms.—ED.]

SUGAR FOR SYRUP.

Will you kindly tell me whether there is any good reason for using only loaf sugar in making syrup? I use it because I am told to do so by those who understand the matter better than I do, but I have never heard any evidence in its favour.

In the present day most manufactured sugars are made more or less from beet, which I have always understood has less nourishing quality than cane, in addition to which I believe much of the saccharine matter is taken out by refining and whitening, to say nothing of what is *put in* by blueing.

Now, Demerara sugar is boiled, brought to a high temperature (280°, I think), and crystallized; is to all appearance unadulterated, and certainly contains more sweetening properties than refined of any sort. I cannot, therefore, understand why this is not as good as, or indeed better, than loaf. —J. H. V.

[The reasons have been many times given. Loaf sugar does not contain any of the water of crystallization, and consequently will make more syrup, and is cheaper than moist, and is not so liable to fermentation. —ED.]

LOCAL AND CHAMPION PRIZES.

Don't you think, Mr. Editor, that the time has come for establishing classes for champions at our local shows, or trying a kind of handicapping? Two or three exhibitors in our district sweep everything before them in the honey line. Now, this has gone on for three seasons, and others are getting discouraged, for the trio referred to take money and medals year after year. I know the old argument, that the best ought to win. That is quite true, but policy says, 'Keep the champions in one class for a time, and give the others a chance:' at any rate the subject is worth ventilating. There is another thing too. Is it right to enter the same exhibit in several classes? It is often done, and the result is that the exhibitor who takes the prize (say) for the largest exhibit of super honey, also takes with portions of the same entry, the award for the largest harvest from a single stock, the prize for the heaviest super, and so on. With the experience of recent shows fresh in our memories, we can now think over these things for next season.—SOMERSET.

A STING IN THE THROAT.

I was stung last summer by a black bee in the larynx, or top of the throat, soon after the singular death at Peterborough, as published in vol. vi. p. 56. Feeling thirsty, some beer had been provided, but a bee took the liberty of drinking first, and got into it, and when I drank it left its sting in the top of my throat; this was about three p.m., and then the trouble began.

The first unpleasantness was that I could scarcely swallow; five p.m., could not swallow at all; I gradually got worse, and feeling 'stuffed' I walked about, or lay down, but kept continually trying to force a passage with saliva. At nine p.m. I took a little liquid food with great difficulty, and felt as if suffering severely from quinsy. I was in a profuse perspiration, owing to the difficulty of breathing. At bedtime my wife got some goose-grease, and rubbed my throat for about forty minutes, and then wrapped it with flannel, and I went to bed, but awoke several times during the night. Next morning I took a little breakfast, and the swelling gradually reduced. My throat felt most painful about four or five hours after the occurrence, and for forty-eight hours after I could slightly feel the pain.

I am following a calling where a medical man is always stationed, but, thinking it a small matter, I never mentioned it to him; and it might have been said of me as of the German soldier of Goldberg who had braved with impunity two campaigns, that I had dealt with the most violent lunatics in asylums for upwards of ten years, yet perished from the sting of a hive-bee at last.—JAS. PAGE, *Jericho, Bury Lane, Oct.* 25, 1880.

HIVES—UNITING WEAK STOCKS.

My bees do very badly; the smoke in our Black Country seems to kill the greater part of the flowers, but I keep them for the love of it, having begun at eight with a Huber leaf-hive, and am this year forty-eight finding how much preferable are the Woodburys. I am very fond of your 'Combination,' but have one objection to it. I prefer the usual hive for doubling, as I fancy that perfect quiet is the *sine quâ non* of success. I kill one queen, take the top off intended permanent box, blow in some smoke and sprinkle some scented syrup; then a blow of smoke into entrance of second box, wait a minute, lift second quietly up and place it on the first, take off top from number two, blow a little smoke to keep bees from rising, sprinkle freely with syrup, replace the quilt and let them be for three or four days. I then shake bees off combs in upper box and remove upper box, and

if need be feed up for the winter and say 'good-bye, my dears,' till end of January or February according to season. Acting thus I have never failed, but whenever I have stirred them up (as ordinarily recommended) I have always had a row, ending generally in a free fight. So that for this one purpose I regard the ordinary box preferable to your Combination. I am inclined to think on the whole that bees more naturally store honey uphill, and so an overhead super seems better than one at far end of box, but, on the other hand, they naturally store honey in outside combs as well as at top, and so your Combination has nothing in it repugnant to nature and habit.—T. W. B., *Haden Cross, Dudley, Nov.* 10, 1880.

[The objection herein will apply equally to all hives with fixed legs, and the under-arrangement for rendering the floor-board moveable, but it does not seem to have been recognised that long hives on the Combination principle offer back space in which the contents of second weak hives could be placed and gently united. Reference to the diagrams in the letter of Mr. Davis on p. 159, will show the space B, and the letter will suggest the mode of procedure.—Ed.]

BEES IN GIPPLAND, AUSTRALIA.

Talk about bees, your hon. secretary should be in Gippland, where he might obtain honey by the ton instead of pounds? Honey there is used by the selectors (*i.e.*, purchasers) like as treacle would be by English children. Felix (my son) has taken two nests from one tree. He always knows where to get a nest when he wants one; he has some hives in the timber (woods), but takes no care of them. Sometimes he will go and take 20 or 30 lbs. out.

The climate being so mild the bees can work most of the year. The eucalyptus blossoms in the winter and early spring, so there is food nearly all the year through.

All the bees in this part died or left their hives three years ago, some even leaving plenty of honey. We had six hives; some died in the winter, although fed on honey and sugar; some lived even till the spring flowers opened into bloom, and then died slowly off till all were gone. We frequently used to see a swarm pass and gave chase, but since the mortality among them I have not seen one.

A farmer in Bungaree, who got the name of Beehive Cameron, through his fancy to possess other people's stocks, had about 120 hives, but scarcely any of them were alive the last time I inquired of him.

Felix, taking two nests out of one tree, found one queen, and then put both together in a gin case, which they half filled,—probably three gallons of bees! The honey was so thick, they had to warm it to make it run. An amusing scene took place in their hut. They were annoyed by hosts of the little black ants that are so numerous in Australia, so that they hung the honey up. Some was left in the bottom cup of a bottle, the ants got in, but the honey stuck to their feet, so that they could not conveniently get at the main portion. Then they went and got little pieces of stringy bark, and laid on the glass to walk on dry-footed, in this way they stole all the honey, and then to induce a fresh supply took up very carefully each piece of the bark and brought it to the edge of the glass and pitched it over. There was sagacity. You may rely on this anecdote as a fact, for my boys watched them carefully.—Samuel Richardson, *Sept. 22nd.*

HEATHER HONEY — A HINT TO SECRETARIES.

I have heard complaints from exhibitors, that they have no chance of competing with those who live near the heather. How is the difficulty to be got over, and healthy competition to be kept up? Would it do to keep heather honey and that gathered from fruit blossom separate; or could any stipulation as to quality be introduced into our prize-lists?—Dorset.

[Our good friends in Scotland have for many years recognised the importance of separating the 'heather' from 'flower' honey, as may be seen by reference to their schedules of prizes for competition.—Ed.]

WELL DONE, DORSET!

In reply to a question asked by a friend who has been looking up local reports, Mr. J. Brown, of Maiden Newton, writes :—

'I began the season with seven or eight hives, and have now about sixteen, all good, after joining several and finding two hives queenless and nearly bee-less, but with a fair quantity of honey. My first swarm was from a straw hive, on May 20th; second, from same hive on June 4th; third, from same on June 17th, three weeks after the first, which is very unusual. The first of these swarms threw two others, both large; but the second cast was returned. All these four products of this straw hive were put in frame hives, partly supplied with comb or foundation, and all were filled and gave supers, the best being from the third swarm. I could sell more honey than I get, if I had it of the same quality. Comb honey brings 1*s.* 6*d.* per lb., and run honey 1*s.* 2*d.* I have taken about 200 lbs., half in supers, the rest extracted. There is no heath near or I should have much more, but it would not sell so well. All my stocks are well stored, perhaps over full.'

An excellent report has also been received from Mr. M. H. Tilley, of Dorchester, who is a most successful skeppist. We are glad to hear that the local clergy and gentry are rallying round the honorary secretary in the most encouraging manner. —D.

AN ENCOURAGING REPORT.

The honorary secretary of the Dorsetshire Bee-keepers' Association has received the following cheery letter from Mr. J. J. Alsford, of Blandford, and we are glad to hear that steps were at once taken to comply with his wishes :—

'I was very glad to read in the November issue of *British Bee Journal* the report of your meeting at Dorchester, and to find that the committee have arranged for lectures, &c., in towns and villages. I hope Blandford will not be overlooked. There is a fine field for operators here. The ground is partially broken

up. I have induced at least twenty persons to give up the old system, and to become converts to the new and improved method of bee-culture, and have, by practical demonstration, taught about half as many again the art of driving and uniting bees. The largest number of stocks I ever undertook at one apiary was twenty-two, in August this year, which I drove and united to twenty others; twelve of the stocks I drove in two hours. I was the first to introduce bar-frame hives and to practise driving in this neighbourhood, and I need not tell you I have had something to contend against from the adherents to the old system. I am happy to say that a good deal of that prejudice is being broken down, but much remains to be done. One friend at your meeting observed that some could work, but not talk. This is my case, or nothing would delight me more than to help you by lecturing on the subject. But if I can assist you in any other way, it will be my greatest pleasure. I have been trying lately to get a few friends together for mutual intercourse, but find a difficulty in getting anyone to preside, but I intend, as soon as I can walk again, to try one or two clergymen in the neighbourhood. I wish the committee would take Blandford into their consideration and give us a lecture. I would supply hives, supers, and other things for exhibition, to save them the trouble of sending them, or help in any other way. When I was on the committee I succeeded in getting some subscribers, and have no doubt that if a stir was made many more might be got; but when I was a member I could hear of no committee meeting for a whole year, so could see no use or profit in being connected with the society, and therefore withdrew. Perhaps being so far from the centre of operations was the reason. I should be glad to hear from you if you can furnish me with anything new, or offer any suggestion.'

GOLD MEDALS AT COLOGNE SHOW.

Herr Gravenhorst a Recipient.

I have been asked by Mr. Dennler to make an important rectification in my account of the Cologne Bee Show, in respect to the prizes distributed there. Most especially is this necessary in regard to Herr Gravenhorst, our old friend at London of the year previous, who, as well as Herr Vogel, had a gold medal granted him for his devotion to apiculture, as well as his literary studies. The omission was due to the fact that Herr Gravenhorst was not himself at Cologne at all. I should be very sorry if he should be annoyed at my failing to notice him, for, as a bee-master, he is held in the highest esteem and respect in Germany, as has been proved by the honour conferred on him at Cologne. Besides this, there were distributed sixteen silver and twenty-one bronze medals for machines, hives, live bees, and bee literature.—G. F. Pearson.

BEES BUSY, OR ROBBING?

Please say in next issue what there is growing at this time of the year to induce bees to be active, as mine have on several occasions this month, when the weather has been a little milder, extremely busy, especially so to-day; or is it they are only embracing the opportunity of taking a flight?—Robert Ranger, *Maidenhead, Nov.* 24.

[We know of nothing but ivy that is likely to tempt bees to honest industry. The probability is that they are robbing other bees, or, which will be equally disagreeable, that they are being robbed. Unusual activity should always provoke inquiry: stocks that are robbing or being robbed seem equally busy, and the unsuspicious bee-keeper looks on with satisfaction: but presently the robbed hive will be found tenantless, and perhaps the robbers will have imported the cause of the weakness (disease) that made them their prey into their own hives.—Ed.]

LIGURIANS IN NEW ZEALAND.

I see by the August number of *British Bee Journal* that Mr. J. J. Potter has written that Ligurians, at that time, had not been introduced into New Zealand. I am now very glad to say that two good stocks were safely landed here two months back, from San Francisco; one I can vouch for as doing well, as I am about taking the management of them, the others are in Christchurch, and I believe from what I have heard doing well also. It seemed quite like old times to see the bright little fellows after having worked amongst none but blacks for the past two years. The advice Mr. J. J. Potter gives to intending emigrants is of the best character, for unless they have someone to come to for help, there is little chance of their doing anything, things are regularly at a standstill. I hope I shall be able to give you good accounts of the Ligurians as the season advances. I hope you are well at Fairlawn, and that the past season has been kind to you. — Frank C. Parish, *Coromandel Apiary, Auckland, Oct.* 7, 1880.

[There are many in England who will be glad to know that our esteemed friend, and for some years able assistant, 'Frank,' is doing well, and the bee-keepers of New Zealand may rely on their new importation being well cared for and safe in his hands. Being intelligent, able, willing, and ingenious, and gentlemanly withal, he is an acquisition anywhere amongst bees and bee-keepers, and is sure to make his way. There were many who could have been better spared from England, and, should circumstances bring him back, there would be no lack of service for him. Such men are needed both here and in Ireland.—Ed.]

BEE-KEEPING IN IRELAND.—REPORT FROM CLONMEL.—AN IRISH ASSOCIATION.

According to promise, I give you a report of my honey produce for the past season. To my loss, but not disappointment, it has not been as great as you anticipated when you visited my apiary on the 10th of August. The season proved a very disappointing one. From the middle of May to about the 13th of June it was most promising, and all that you saw of my supers on the day of your visit had been completed before the end of the first week of June. Then came an interval of nearly eight weeks, during which the fields were white with clover bloom, and later the hundreds of lime-trees covered with bloom; but owing to the inclement storms and rains, not a bee was to be seen on field or tree, and my bees were feeding on my raspberries and strawberries. Consequently, the stores accumulated in the earlier time were very much exhausted before the change of weather, of which your visit was the harbinger; but the distance of the great heather range and the excessive heat rendered it improbable to me, and, as events show, impossible to my little pets, who did the best to make up for lost time; besides every supered box, except three, threw out a swarm (or I should say swarms), but I returned after-casts. Under these circumstances, I could scarcely expect a return adequate to the number of my stocks. However, I have disposed of 640 lbs. of my super-comb,

and 140 lbs. of extracted fluid-honey, and I have over 200 sections from 10 inches by 5 inches to 7 inches by 5 inches, more or less filled with comb, from which I have extracted the unsealed honey, and nearly forty Langstroth frames, which not being completed to saleable condition, I have subjected to similar treatment. All these remain as a foundation for next year's hopes.

But besides the above, my forty-two boxes are heavily over-stocked with sealed comb, which I have left with them until spring, when (D. V.) I will remove the surplus, as I have found it difficult to dispose of extracted honey in *bulk*, not having yet used bottles. With far fewer stocks in 1878 I cleared nearly 20*l.* more, but then the best part of the season, from June 15 to August 1, was fine; but a clear profit on management in a precarious season of 25*l.* is not to be despised, bearing in mind that the expense, without any return of 1879, is included per contra against this year's profit.

If you have not yet heard it, I am sure it will gratify you to find that, as a result of your tour last August, a great stir has been made among apiarians in Ireland, and it has been determined that we shall have an 'Irish Apiarian Association.' The work has been initiated, and will, I doubt not, succeed. I am working it up in my own neighbourhood, but our infantile efforts, I am sure, will be watched by our elder sister, with which (I was going to say, we hope to be affiliated, which would be rather an Irishism) we hope to be associated, with interest.—GEORGE A. PROCTOR, *Tullamelan, Clonmel, Nov.* 20, 1880.

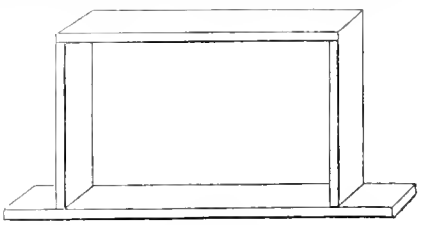
NEWSPAPER BEE-KEEPING. From the *Standard*.—A Melbourne correspondent writes:—'A singular circumstance is reported from a hot dry valley in New South Wales. Last year the drought there was of long duration, and the denizens of the apiaries suffered much from it. This year the bees have made provisions against a similar emergency. They have filled a large number of the external cells in every hive with pure water instead of honey. It is thought that the instinct of the little creatures leads them to anticipate a hot summer. But that they should have gone further, and, by an act which, as far as I know, is without precedent in the habits and customs of their tribes, have created reservoirs to tide over the water-famine is a noteworthy fact indeed. If they had been American instead of Australian bees, the process would doubtless have been patented ere this. As it is, our artificers give all beedom the benefit of their inventiveness.'

Echoes from the Hives.

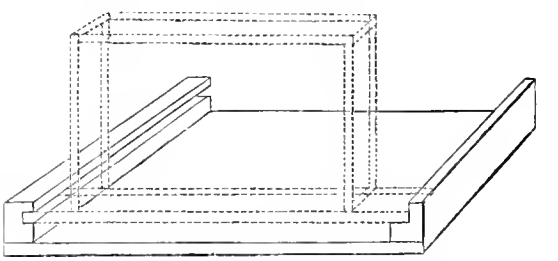
Chester-le-Street, Durham.—Various matters.—Preventing Recrystallisation of Syrup.—'I have been ventilating the ideas taught in the *Journal* in the *Newcastle Weekly Chronicle*, and have since the first letter appeared been deluged for information. The most lamentable ignorance prevails upon bee-culture. To give you a specimen, a week after my first article on bee-keeping appeared, a person walked over ten miles to ask me the best method of requeening a hive without any bees. He had heard of Neighbour's advertisement for queen-bees, and, after really understanding what he required, I found he had an idea of purchasing a queen, and placing her in a hive of empty combs, fully believing that a stock could be obtained by that means. I showed to his astonished eyes frames, hives, combs, foundations, and honey extractor, and Italian and black bees, and the result was his ideas became a little reformed, and he expressed his gratification at what he had seen.

'This is my first failure in having a good honey yield, and I account for it by our having several very wet weeks during the honey harvest; however, my bees are in first-class trim, and very strong. I noticed the Italians gave over breeding before the blacks, as little food was coming in. They had been on the alert sooner, however, and as soon as I found how matters stood, commenced to feed, and breeding has recommenced. I do not know whether it is generally known amongst bee-keepers that *glucose* is a most unfailing agent in preventing crystallisation of sugar under any conditions, about a pint to 14 lbs. of sugar. There is, I find, great difference in the tendency of different sugars to crystallisation, and this, no doubt, accounts for the diversity of opinion as to the most effective means of preventing it forming crystals; however, it is well known to confectioners that glucose will effectually prevent any sugar from recrystallising. The progeny of the Ligurian I received from you last year are the prettiest yellow bees I have ever had, and every way satisfactory. I well remember one Italian I had breeding jet-black bees, perfect little demons; and I was not at all sorry to dethrone her, and substitute another monarch. Wishing every success to you and the *Bee Journal*.'—W. CRISP.

Stretton Parsonage, Stafford.—Combination Hive.—'As I am writing, I may mention that I made a Combination, and fitted it with frames, which I have found good and like it very much. The July rains spoiled our harvest here, but the bees did better in the Combination than in any of my other hives. The principle is the same as that recommended to me by a relation in Italy as the hive which gave him most honey. In the sketch he sent me, the frames were kept together by a cord bound round a screw in back and front and a groove in floor-board. I have lost the sketch, but think



Frame.



Floor-board with frame running in groove.

this was the plan, but I fancy the Combination is the most convenient.'—J. W. NAPIER.

[The Italian hive alluded to was doubtless some modification of the Giotto, as illustrated last September. The frames are widened and extended at the bottom bars, which are run in groove-rabbet in bottom-board as indicated. Several frames thus set together would be kept in place by a string round them near the top, and it is evident that they could not fall about or blow over.—ED.]

Dunoon, Argyllshire.—'My bees have just begun to kill the drones. I never knew them to be so late. I suppose it is owing to the very fine weather which we have been favoured with in the west of Scotland during the month of September and up to this date; in fact, the summer and autumn have been exceptionally fine, and all our advanced apiarians have had an abundant honey harvest. I commenced this spring with three boxes on the bar principle, two of which were interchangeable with three that I made the previous winter.

I transferred the queens from the two boxes, with plenty of brood and honey, to the new boxes on the 7th of June, and they became quite strong in about three weeks. Having an empty box, I parted one of these boxes a second time, putting the queen and about half the brood, comb, and honey, into the new box on the 23rd of July (just in time for the heather), which became very strong, filling nine bars with comb in about three weeks, and splendid supers of 24 lbs. by the end of August. Of course the box, or rather the colony, that had to provide themselves two queens, was not so productive as the others, but I took several bars from them, and they are now in fine condition for the winter. My honey harvest in all amounted to 210 lbs., for which I have realized 12*l.*, besides giving away several pounds in presents and keeping a supply for home consumption.'—DUNCAN STUART.

Dublin, Oct. 22.—The Weather.—Late Breeding, and late Drones.—'One of the queens was dead in the cage—the other five are all right. Introduced them just in time, as now we have it very cold, with frost and snow. It may interest you to know that the hives were full of brood, young bees and drones, owing to the fineness of the weather, and the abundance of ivy blossom.'—E. W.

Maidenhead, Oct. 24th.—'Is it not late for bees to be carrying pollen into hives, Oct. 19th? Three out of eleven were doing so, though the next morning they were white with snow. To-day, a bright day, all seem strong. Have been well fed, and will to-morrow be closely covered down until February.'—M. A. R.

Selkirk, N.B., Oct. 25.—'I have got twenty 2-lb. sectional supers, and about 40 lbs. out of the inside of a Standard hive, and 18 lbs. off another, and the same out of the inside; but I did not take any swarms from these two hives. It may not be so good as it is in some districts, but it is something new here. The old bee-keepers here that have ten or more stocks of bees in straw hives have not got as much honey of the ten as I have got of two.'—SIDNEY ROEBUCK.

Queries and Replies.

QUERY No. 362.—*Frames across hives.*—In your next month's *Journal*, will you please tell me what is the advantage of Abbott's frame-hives having the entrance at the sides of the frames instead of opposite the ends?—RICHARD COULTON, *Towhaw, Darlington.*

REPLY TO QUERY No. 362.—The advantages are chiefly in the conveniences the principle affords for enlarging or reducing the space to meet the requirements of the bees and the exigencies of the season, there being nothing in the habits of the bees against it.—ED.

QUERY No. 363.—Will you kindly give me your advice through the columns of the *Bee Journal*? Towards the end of the honey-harvest, one of the combs in my bar-frame fell down, and as it was composed of brood-comb chiefly, full of honey, and quite pure and white, I removed it for use, putting in an empty frame. Before packing up the hive for the winter, I took out this frame, and another also (which is full of honey with some pollen), and put in a piece of wood in order to confine the bees to a smaller space. When would be the best time to put back these frames? and ought I to put them on the outside from whence I took them? or should I put them nearer to the middle of the hive? I may add that I do not intend to use the honey in the other frame which I removed, and that my hive is one of your Makeshift Standards. I have left the bees six frames nearly full of sealed honey. A LADY BEE-KEEPER, *Carlisle.*

REPLY TO QUERY No. 363. It will not be necessary to return the frames of comb until the bees show symptoms of crowding in the spring, unless, in the meantime, they need food, when the frame of honey and pollen may safely be given to them. Should the latter contingency arise, it will be best to place it next to the clustering bees, so that they may not have to go far to find it, in preference to putting it amongst them, with the chance of loss their disturbance in winter might cause. Should they not need the frames until the spring, they may be replaced amongst the brood, the cells being first unsealed, when the bees will immediately empty them, and the queen will occupy them with eggs, and rapid increase will be provoked.—ED.

QUERY No. 364.—*Hive-making.*—What size of hive would be the best for this district, using sections at the back of brood nest? We have within easy flight market and private gardens, also Wimbledon Common, which last has a fair quantity of heather. Barnes Common is within 200 yards of the hives I have at present, and also has a fair quantity of heather, broom, gorse, &c. Should the frames touch the sides of the hive? and which are the best, Woodbury or Standard size? Could you supply me with working drawings to scale? Would ½-inch outer and ⅜-inch inner walls, with a space of 1 inch between, do for body box, or might the wood be thinner with safety?—P. B. A., *Queene's Ryde, Barnes Common, S.W.*

REPLY TO QUERY No. 364.—The Woodbury size of the kind described herein as the Irish hive would be excellent for the purpose. The frames should hang clear of the sides, a ¼ inch space between being the proper distance. Each piece required is accurately described in this month's *Journal*. ½-inch inner and outer-casings, with dead air between, will do very well, or inch pine alone, considering that the front and back can be well packed for wintering, will be sufficient.—ED.

NOTICES TO CORRESPONDENTS & INQUIRERS

A. F. ROSTREVER.—*Robbing (?)*—The weather having changed to fine and warm, it is probable that the bees were taking an airing flight. Robbery does not begin or cease suddenly, and would not be likely to occur in four of the stocks without warning. If the symptoms recur, dust the bees at one of the hives with flour, and watch if any of the marked ones go into another hive. By doing this with different coloured powders, the question of robbing versus airing flight will soon be settled, for if only the latter, the bees of each hive (and colour) will enter their own hive only. It must not be held to be a proof of robbery that only a few stocks disport themselves at the same hour, there may be influences to this which are not apparent to the onlooker. Late feeding will often make the necessity for an airing flight urgent, and the bees will take even an unfavourable opportunity, while others in better condition will not be moving.

SUBSCRIPTIONS DUE.—There are several hundreds of pink wrappers sent out with this issue of the *Bee Journal*, indicating that subscriptions are due, or in arrear: and we earnestly hope that our friends will respond to them without delay. To each of them it can be only a small question, entailing a very little trouble, but to us it is a large one of serious consequence. We work very hard in the cause of bee-culture, we give our best ideas on the subject, and put every facility in the way of our readers for them to acquire whatever they wish for in the readiest and cheapest possible way, and we really think they ought not to force upon us the expense and difficulties connected with the keeping of open accounts for the *Journal*. The year 1880 is very nearly at an end, it will be one of happy memory for many thousands of bee-keepers, and we ask them to make it memorable to us by purging our subscription-list of the many pink stains upon it, and making a clean sheet for 1881; and in the hope that this will be done, we in all sincerity wish our readers, and all the world, a Merry Christmas and a Happy New Year.

THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

[No. 93. Vol. VIII.] JANUARY, 1881. [Published Monthly.]

Editorial, Notices, &c.

JANUARY.

Christmas has passed, and we trust it has been a merry one in all senses; and we most sincerely wish all our readers and their friends a Happy New Year, and 'many ov 'em.' Coming after a year of disaster like 1879, which had itself been preceded by a 'trying' year, the season '80 was a blessing for which none of us can be too grateful, for it gave in profusion all that the earth could produce, and more abundantly favoured its culturists. May God give us thankful hearts! Fortunately for all out-door occupations, the winter weather thus far has been mild and comparatively dry, so that the work necessary in preparation for the year upon whose threshold we stand has progressed almost without hindrance, and (leaving out the question of rents, taxes, &c., the discussion of which is no part of our business) the prospect for agriculture, in all its branches, is a good one. In our speciality—bee-culture—there is eminent ground for satisfaction; two years ago we were threatened with the extermination of our industry by the inpouring of vast consignments of honey from America, and elsewhere, which could, it was said, be produced and delivered here so cheaply, and in such readily saleable parcels, as to render its home growth unremunerative, and a kind of 'scare' was the immediate consequence. But, happily, American honey is not English, and not all the fancy labels or packages in the universe will cheat the English palate, or persuade the people to swallow an inferior article if a good one can be had; and as a consequence, it has been found that importing even the best American product does not pay. Naturally, in times of scarcity almost anything will sell; but the honey of home growth will always command the trade, and, thanks to the good year 1880, and the impetus given to bee-keeping by the *Journal*, the Associations, and the Shows, we have been enabled to hold our own and produce a supply of delicious nectar that sets the foreigner at defiance. We must not, however, attempt to deny that the great import of American honey was a surprise, nor that it frightened many; nor will we pretend that its preparation did not exhibit a superior knowledge of the means of cultivating the bee to that which had been previously shown in this country, but we are glad to say that instead of producing general or permanent alarm, it acted as a stimulus; and British bee-keepers are now able to supply the market with honey in the comb far superior in quality, and equal in beauty and appearance, to that of any other country in the world.

The rapid advance, also, that has been made during the past year in the manufacture and use of comb-foundation is most gratifying; a few years since it cost five shillings per lb., and was little used; now it can be had for half the money, and is tenfold more in demand. Formerly it could only be used in narrow slips through fear of its breaking with the weight of the bees; but now frames are filled with it (nearly) with confidence and satisfaction, so that while bees were ten to fourteen days filling their hives with combs, they now do the work in three, and are free for immediate honey gathering and storing for profit.

The rapid increase in the number of Bee-keepers' Associations is a hopeful sign of the times; and the extension of the knowledge of improved bee-culture to Ireland, and of the formation of a Central Association there, are facts happily accomplished. The endeavour to establish a Professorship under Government has, unfortunately, not been quite successful; but great interest has been aroused; and there is reason to hope that in the ensuing year the application will be favourably received, when bee-culture becoming a branch of national education, the cobwebs of ignorance and superstition will be swept out of the apiary, and England will cease to be a laughing-stock amongst Continental bee-keepers. The introduction of bees direct from Cyprus was another achievement of the year, as was also the associ-

ation of bee-keeping with dairy farming at the Agricultural Hall on the occasion of the great show of Dairy Farming Produce in October. The publication of the *Handbook for Cottagers*, and the diagrams for lecturers on bees and bee-keeping, are also among the 'events' of the year; and there are many other facts accomplished that will render the year a memorable one.

Turning now to the future, we cannot pretend to unveil what is hidden, we are told by Dr. Dzierzon, one of the greatest Continental bee-masters, that the little we know of bees is but as the sand on the shore in comparison with the treasures of the ocean; and we can scarcely hope that the waves of a year, or even a lifetime, will reveal them. But gradually they will be brought to light; step by step, one by one, the secrets of nature are unravelled, and the mind of man bounds with delight as the beauty of the glorious fitness of things, and the mutuality of their relations, are discovered. Light has of late been let into the mystery which, for ages, had enveloped and shrouded the transformation of worker larvæ to queens; much had been discovered by Huber and others, but in the paper read by Dr. Donhoff at the Congress of Austrian and German bee-masters at Cologne, and published in the December number of this *Journal* through the kind favour of S. Stutterd, Esq., of Banbury, the keynote to the mystery has been sounded, and 'the relation of bees to flowers' illustrated in a remarkably striking way. Many scientific minds are bent upon the solution of other mysteries, and rapid strides are being made whose results will appear in due course; but leaving the vista of speculation, the elysium of scientists, whose view is beyond the ken of ordinary minds, we will return to the practical, the bread-and-cheese of bee-keeping, and endeavour to suggest improvement where experience has shown the dubiety of present conditions. Want of space will prevent long discussion of the subjects at the present moment; and in mentioning them we have but the one broad object that has formed our governing principle as public exponents, viz. the improvement of bee-culture; and though we may sometimes be upon delicate ground, we trust that we may not, even by accident or implication, touch even the fringe of personality, or be thought to be airing personal grievances. The subjects we propose for discussion will embrace the following, and we respectfully commend them to the consideration of Associations and Committees, to whom they properly belong, and invite the opinions of individuals for publication in this *Journal*.

1. The establishment of rules, on set principles, for the guidance of judges at Exhibitions; and, as far as may be practicable, the appointment and maintenance of special sets of permanent judges for the various departments, or subdivisions of departments.

2. That in offering prizes for manufactured goods, the principles of construction required shall be stated in the schedule; and prizes only to be given for improvements on former exhibits in the same classes.

3. That with a view to establishing a Standard frame for the United Kingdom, Associations should offer prizes for hives only that contain frames of a size, or of sizes, to be determined on by a congress of experts, that the manufacture of hives, &c., with only sufficient variation in size of frames, &c., to prevent their interchangeability may be discouraged.

4. That prizes for manufactured goods shall only be awarded to manufacturers on the understanding that they shall supply the public with counterparts of the exhibits at the prices stated on their entry papers.

5. That any member of an Association who receives payment for services rendered to such Association shall be disqualified from acting on its committee of management.

6. The propriety of property, or subscription, qualifications for committeemanship—plurality of votes in respect thereof, and the power of manufacturing votes under such circumstances.

7. The policy of Associations becoming shop-keepers, &c., &c.

8. The policy of establishing juries in lieu of the present system of independent, promiscuous judges and inviting criticism of exhibits before such juries who shall afterwards make their awards.

9. The necessity for every exhibitor having an opportunity of explaining any new features he may have imported into his exhibit.

These and any kindred matters that may suggest themselves we propose to make subjects of comment from time to time, and trust the effect will be for the common good of all.

WORK FOR THE MONTH.

The chief work of January is 'preparation' for the coming spring. Next month, when the crocuses appear, artificial pollen will be in request. It will be well, therefore, to purchase some in readiness. Get it direct from the manufacturer if possible, or it may not be fresh, and stale stuff is disappointing, for the bees will not take it. Pea-flour is the best, all things considered, and from large experience we can safely recommend it. Those whose bees have access to large beds of crocuses, arabis, and the like, from which they can get large quantities of natural pollen, will not be

at all keen upon the artificial. We have this year about 18,000 crocuses coming up, any quantity of *Arabis alpinus*, some scores of pollen-bearing willows, and several thousands of the new and excellent *Limnanthes Douglasii*, so we shall not probably require much pea-flour, although in bygone years our bees have consumed a shilling'sworth (more or less) daily, or every day they could fly during crocus-time.

We wish we could induce bee-keepers to provide a stock of temporary hives, cheap boxes holding frames of the size they use in general, that they may be ready for emergency. Every year we sound the same warning note, 'Be ready!' but 'the thief of time' suggests that there is time enough yet, and things are put off until they are indispensable, and it is 'too late.'

By preparing a few boxes, holding say half-a-dozen frames each, in advance, one is always ready for a chance swarm from one's own or another's apiary, and one is independent of the hive-manufacturer during the busiest time, while others have to wait while hives, &c. are being made. After so good a season (generally) as 1880, we confidently anticipate a vast increase in the number of bee-keepers; and though hive-makers will do their utmost to provide for the demands that will certainly be made upon them, there will surely be some who will have to wait. By ordering early the customer can get his goods by the cheapest route, viz., by 'goods' instead of passenger train, or express messenger, and there is the time for painting and arranging as may be necessary. Last year we had three telegrams in June to say the bees had swarmed, there were no hives ready, and we were to send a messenger with hives forthwith, doubling the cost of the hives, and risking the loss of the swarms, besides which, the hives we were able to send were not of the pattern required.

'A word to the wise is sufficient for them;' others must put up with the consequences of procrastination.

ABBOTT'S LONG-HOLED EXCLUDER ZINC.

An American correspondent, writing to Mr. A. I. Root, Editor of *Gleanings in Bee-culture*, asks for tinner's punches of suitable size for punching holes in tin separators, with which he says there is a widespread dissatisfaction; and Mr. Root, in reply, writes:—

'The subject is being considerably agitated now, friend H., but I fear you will not be able to get a punch to perforate the separators you now have, because it would bulge and curl up the tin, unless a die was made to work with the punch. Who among us has the necessary skill and tools to make such a machine for a small amount of money? Friend Jones is very enthusiastic on a separator made to divide off the hive, so that the queen and drones can be "fenced off," as it were, from the workers. The holes are to be oblong, and he says that if made exactly right, the workers pass and repass without trouble, but the queen and drones are effectually excluded. The separators are made of zinc, and with a pair of them he claims to be able to make the bees store all the honey they gather in section-boxes, in the body of the hive, and in the centre of the brood-nest if we wish, and that, too, without getting either brood or pollen in them. The idea, I believe, comes mainly from our English friends. If I am correct, no surplus-boxes are used on top, but all are placed in one brood apartment, and the frame is to be a deep one—much like the old American frame that has been used so extensively, and mostly discarded, if I mistake not. Our usual frame of sections, placed on each side of the brood-nest, it seems to me, covers about the whole of this ground, but perhaps I am not right about it. I have no doubt but that the perforated separators will be a great advance; but I cannot see how it will pay to perforate the metal by hand, unless one has much spare time on his hands.'

While thanking Mr. Root for conceding to English bee-keepers the credit of introducing excluder-zinc to bee uses we feel bound to caution American friends generally against the misapprehension as to its utilities that is apparent in his reply.

Zinc with round-holed perforations was first brought into public notice for queen-excluding purposes by Mr. Obed Poole, of Uphill, Weston-super-Mare, in 1875; and a letter of his will be found in page 75 of the *British Bee Journal* for that year, in which he stated that he had used it 'for some years.' Mr. Poole also said, 'Another good feature in the zinc is, I believe, that it is almost impossible for a bee to get through with a load of pollen'; and this fact is an important one as distinguishing the round-holed zinc from the long-holed of later introduction. The zinc used by Mr. Poole had 3-16-inch perforations, but after considerable experience it was found to be a little too large; and on the recommendation of Mr. Cowan, that having 5-24 came generally into use; and it was with this kind we covered our 'new idea' frame of 1877, a full description of which was given in *Journal*, page 62, of that year, and which Mr. D. A. Jones, of Ontario, is now introducing into America. Subsequent to that date, and through correspondence and personal contact with Colonel Pearson, of Nancy, France, —who will ever be remembered in connexion with improved bee-culture both there and here—we were made aware that the late venerable Abbé Collin had been for years using sheet-iron with oblong holes in it for excluding purposes, and having obtained samples, presently succeeded in obtaining the correct thing in zinc, as it is now largely used in all English apiaries. The round-hole perforation admits the body of a worker, but gives it a scraping squeeze all round, thereby effectually preventing the passage of pollen. The Abbé Collin had abandoned the round hole on this very account, and adopted the long but narrower hole through which a

queen cannot pass her thorax, while a worker can easily pass through with very slight pressure, and with no hindrance to her pollen-carrying. We trust the advanced Americans who follow Mr. Jones' lead with his Anglo-French contribution to improvement in bee-culture will not be disappointed if their first experiments are not entirely satisfactory—the round holes that will barely admit the abdomen of a worker, and keep out the pollen, will sometimes admit the thorax of a queen (her largest diameter), while the narrower long hole which is an efficient excluder to the queen, yet will permit the passage of a worker with slight flattening pressure, will admit its load of pollen also. Probably a slightly elliptical hole is the *sine quâ non* for all purposes; but with a knowledge of the above facts we get along very well. We had the pleasure of supplying Mr. Jones with the zinc with which he has been experimenting when he was here in May last, and are glad he is able to commend it.—Ed. *B. B. J.*

STINGLESS BEE ASSOCIATION OF AMERICA.

A 'cute bee-keeper of Rochester, N. Y., is asking the co-operation of at least a hundred of those who have ten dollars to spare to enable him to visit Brazil in search of bees existing there that have 'no stingers;' and in return they are to have one stingless bee queen each, 'guaranteed safe arrival.' If two hundred subscribers turn up they are each to have two queens; and if three hundred (he does not want more), then each is to have three queens of 'the very best variety.' The promoter undertakes to go to Brazil and take charge of the enterprise (and the 600*l.*, of course), and do his level best. He is calmly satisfied that his announcement on the 15th September last was the first ever given in the United States that stingless bees existed 'anywhere on the habitable globe,' and that being so we in England claim to be a little in advance, for our friend, W. Carr, Esq., of Newton Heath, Manchester, rather fully described such bees in the second volume of our *Journal*, under the heading 'Trigona, or Brazilian Stingless Bees.' Our American friend has discovered that there are no less than eighteen distinct varieties of bees, instead of one (where?—Ed.); but Mr. Carr tells us of 'about seventy' in Brazil, and moreover that, although they cannot sting, they bite most unmercifully, and when provoked make 'a terrible attack' on their disturber, and usually 'cut off his hair.' (See page 174, Vol. IV., *B. B. J.*) Our Yankee friend does not tell us about this 'barber'-ous propensity of the bees of his ambition, perhaps because, in addition to hair-cutting, they have a penchant for 'shaving.'

'MODERN BEE-KEEPING' AND DIAGRAMS.

We are requested to state that *Modern Bee-keeping: A Handbook for Cottagers*, and the 'Diagrams illustrating Bee Life and Culture, and the Relations of Bees to Flowering Plants,' and which have now been included in the list of apparatus for Science Schools by the Science and Art Department at South Kensington, are about to be published for the British Bee-keepers' Association by Messrs. Longman & Co., the well-known educational and other publishers, of Paternoster Row. The second edition of the *Handbook*, consisting of five thousand copies, will shortly be issued. Persons who are desirous of advertising in the same are requested to make early application for space to the Assistant Secretary, Mr. J. Huckle, King's Langley, Watford, Herts. For charges for advertisements, see Report of Committee meeting of B.B.K.A.

BRITISH BEE-KEEPERS' ASSOCIATION.

The Committee Meeting of the B. B. K. A., was held at 105 Jermyn Street, St. James's, on Wednesday, December 8th. Present: Mr. T. W. Cowan (in the chair), Rev. E. Bartrum, F. Cheshire, J. M. Hooker, W. O'B. Glennie (Treasurer), and Rev. H. R. Peel (Hon. Sec.). The minutes of the last Committee Meeting were read and confirmed. The balance-sheet for the month ending Nov. 30th was read, showing a balance in hand of 7*s.* 5*d.* The Chairman reported, on behalf of the sub-committee, 'That the arrangements for the publication of the second edition of "Modern Bee-keeping" were now complete; the work had been revised, and Mr. Cheshire had prepared an extra chapter on "Robbing."' It was resolved that Mr. Cheshire be empowered to obtain a block for illustrating the chapter on robbing; and that the following prices be charged for advertisements in the new edition of the *Handbook*, viz., whole page, 40*s.*; half page, 22*s.* 6*d.*; third page, 15*s.*

The Honorary Secretary moved and the Rev. E. Bartrum seconded, 'That the silver and bronze medals and certificate offered for competition at the annual shows of affiliated Societies should be open for competition only to members of the County Association residing within the county.' (Carried unanimously.)

With regard to the practice of private sales effected at shows, and not being transacted at the sales office, which had been found productive of much confusion and inconvenience, it was resolved, 'That a more stringent rule should be drawn up, relating to the payment of commissions on sales and inserted in all future schedules, for the purpose of making the payment of commission on all sales, by whatever means effected, compulsory.'

The Honorary Secretary announced that though from special circumstances he would gladly be relieved of his office at the close of 1880, he would still undertake to discharge the duties of Honorary Secretary if such were the wish of the General Meeting, and they continued the payment of the salary of the Assistant Secretary.

The next Quarterly Meeting of the Association will take place on Wednesday, January 19th, when a paper will be read by Frank Lyon, Esq., on 'Cheap Bar-Frame Hives for Cottagers' Use.' The Annual General Meeting of the Association will take place on Wednesday, February 16th.

BRITISH BEE-KEEPERS' CONVERSAZIONE.

Discussion on the Rev. E. Bartrum's Paper on the Stewarton Hive.

The discussion was commenced by Mr. T. W. Cowan, who said that after sixteen years' experience with the Stewarton hive, he might be expected to say something about it. He was not prepared to condemn it, but on the contrary, he considered it a very useful hive, which certainly held an intermediate position between the straw skep and the moveable comb hive. It was far superior to the straw skep, but did not come up to the moveable comb hive. This gave the bee-master complete control over his bees, and allowed him to perform operations with ease which would be extremely difficult if he only used the Stewarton hive. He had adopted several variations in working the Stewarton system, and had found generally two body-boxes and an eke sufficient. Instead of having an entrance to each body-box, he preferred the three entrances in the lower body-box, as recommended by 'the Renfrewshire Bee-keeper.' There were only four frames in a Stewarton box, and these were screwed down, and before they could be made moveable or an examination of the hive take place they had to be unscrewed. To examine the side combs the boxes have to be turned up, and unless the frames are screwed down they fall out. He had witnessed an accident of this sort last summer when visiting a friend who had a Stewarton hive. His friend had forgotten that he had not screwed down the frames, and on turning over the hives, frames, combs, and bees all fell to the ground in one confused mass. The trouble of making a thorough examination of Stewarton hives is, moreover, greatly increased by having to go through the same operation in each box; and when these are taken apart and are full of bees, it is not such an easy matter. He had stocked Stewarton hives with as many as five swarms, but had found by experience that two good swarms placed in the body-boxes did better than a larger number. Mr. Bartrum had mentioned as one of the advantages of the Stewarton hive the side slits for admitting the bees into supers, and preventing the queens going up into them; but the same plan was adopted by those who used moveable comb-hives for the same purpose. Here, however, he would admit that the Stewartons had the advantage, as in these the queen would rarely visit the outer combs if she had sufficient room for laying in the centre of the hive. His opinion was in favour of frame-hives, as in them you can make the bees increase more rapidly. By following out his plan, published some years ago and now universally adopted by advanced bee-keepers, viz. that of contracting the brood-chamber of a hive so that the bees cover every comb and spreading the brood, it is astonishing how rapidly a weak hive may be built up and become strong, and that under conditions which would prove fatal to a Stewarton. Bees are more inclined to extend their brood-chamber laterally, but this is prevented in the Stewarton hive by the outer combs, which act like blocks of ice, compelling the bees to extend their brood nest downwards. Although he had been for many years a successful exhibitor of Stewarton supers, he could not allow that sections gave so much trouble to the bee-keeper as Mr. Bartrum would make out. He did not see why it was necessary to have three tiers of sections when one would do as well, or better. He used a rack of twenty-one sections, and had found this by proper management quite sufficient for a whole season, for as fast as any of the sections become filled they are removed, and empty ones put in their places. There is a great advantage in being able to remove a comb as soon as finished, as the bees do not discolour it or increase the thickness of the wax covering to the cells, as they do if left too long on the hive; and as the centre combs are completed before the outer ones, much time is saved by their removal. With a Stewarton hive you have to wait until the outside combs of the supers are sealed over, or they do not look well; and by the time this is done, unless the flow of honey is very great, the centre combs are overdone. He thought that the plan of giving bees additional breeding space, at the rate of one or two frames at a time, preferable to giving them a whole body-box, as in the Stewarton, because the heat of the hive is better utilised if the hive is enlarged only in proportion to the requirements of the colony. He had prevented swarming in moveable comb-hives by removing some of the combs and filling up their places with comb foundation or empty combs; this gave the queen more breeding room. Also, the free use of the extractor assisted very much in checking swarming, and was only advantageously applicable to moveable comb hives. Mr. Bartrum had mentioned 164 lbs. of super honey and 30 lbs. from body-boxes as being the largest harvest of honey from a Stewarton; but he would mention that he had taken 120 lbs. of super honey, and 80 lbs. of extracted honey from one frame-hive, and this showed a balance in favour of the frame-hive. Had the extractor been used entirely he had no doubt this quantity might have been doubled. He did not see the use of the buttons on the Stewarton boxes and thought they were only in the way. He had not found the slides much trouble, and if the hives were strong enough in bees the internal temperature of the hive would always be sufficient to prevent their being too firmly fixed in the grooves. As to manipulations, such as cutting out queen-cells, removing brood, and artificial swarming, no one can deny that they are carried on much more easily in a moveable comb-hive. He wished to say one word as to feeding. The idea occurred to him that it would be a great advantage if in the autumn one hive could be made to do the work of a whole apiary. Those who were feeding their bees know that last week the cold put a sudden stop to it. Now all honey or syrup unsealed ought to be extracted, or the stocks would be liable to dysentery. Instead of feeding up each hive separately, he had fitted up a paraffin stove in one of his bee-houses, and kept one hive at a high temperature day and night. He had had a large feeder made to hold half a gallon, which was placed on the top of the hive, and was replenished as fast as the bees carried the syrup down. In this way he had got these bees to fill and seal their combs from top to bottom, and as fast as they were completed he removed them, and distributed them amongst those hives requiring stores. So far the experiment had been satisfactory.

Mr. Cheshire considered Mr. Bartrum's paper to contain so much that was excellent and valuable, and which withal made out such a strong case, that he did not feel disposed to attack the Stewarton at all sharply. He said it was difficult in a Stewarton hive to overhaul the stock, and finding the queen was often impossible, though by putting side slips to the outside bars, the difficulty is considerably lessened. No doubt the great advantage of the Stewarton hive is its elasticity. With regard to the moveable comb hive, we have not all of us yet attained perfection, and indeed ordinary management left the frame-hive practically inelastic. The common idea used to be that bees were to be put into a bar-frame hive, and expected to fill the supers without any further trouble on the part of the bee-keeper. An intelligent bee-keeper would not think now of putting a few bees to ramble ad libitum over a large empty hive, and fill it as they best could. He who knows how to manage would narrow the space in which his bees are placed by the means of dummies, and then, as the bees multiply, keep on expanding that space until his hive is quite full of bees. The Stewarton is certainly not so gradually expansible as the frame-hive, as one must pass at once from

one box to two, or at best to a box and eke. Though much may be done in the Stewarton towards preventing swarming, the same may be accomplished in the bar-framed hive by continual expansion. The great secret of success is to increase the brood-nest gradually, and to obtain a large quantity of bees *before* the beginning of the honey harvest. He had obtained such results last year by acting on this principle, as could not have been obtained in any other way. A principal desideratum in any form of hive lies in its expansibility and its contractibility; the lack of which, even if it had no other drawback, would put the skep utterly out of court in the opinion of those who have learnt modern plans. There is a change of opinion discernible as to the size of hives. The Americans begin to say that their hives are too big, and smaller hives are coming into favour. The less room you have in the brood-box, the more bees you must, of course, have in your sections. Give the queen room enough, but short of this all hives should be contracted as much as possible when supers are put on; all combs containing no brood being removed. With regard to feeding, Mr. Cheshire had now tried flour-cake for two seasons, and could speak of it in the highest terms of approval. He had used tallow to grease the slides of his Stewarton hives, and had found that this prevented the bees from fastening them down with propolis. He mentioned in reference to the number of swarms which might be put into a Stewarton hive, that some French experiments show clearly that 67,000 bees give the best results, and that little good is done if swarms are added after 12 lbs. of bees have been massed together. Mr. Cheshire disapproved of the buttons on the Stewarton hive, as the bees would fix the boxes together, quite well enough for themselves. In conclusion, Mr. Cheshire allowed that much was to be said for the Stewarton hive, but declared his belief that as bee-keepers go on with the ordinary frame-hive, and learn by experience how much may be done with it, the latter will come more and more exclusively to the front.

The Rev. George Raynor had worked the Stewarton hive for twenty years, but not in its improved form. The frames were originally not removeable, and in that form the hive was not to be encouraged. He had tried greasing the slides, and had not found it to answer, as the bees removed the tallow, and then propolised. With regard to facility of manipulations he was of opinion that the Stewarton must yield to the bar-frame hive.

Captain Campbell regarded the Stewarton hive as a convenience. Some friends of his had asked him to take care of their Stewarton hives during their absence from home, and he had soon found out the difficulty arising from the side frames being screwed down. He had turned them all into moveable frames, and had put them into the Slinger. He found the Stewarton supers unwieldy and inconvenient. It was also difficult to find purchasers for supers weighing 20 lbs.; but he was fond of taking a holiday now and then; and as his frame-hives kept him rather too much at work, he admitted the convenience of the Stewarton for those who could not be always attending to their hives. He made his own Stewarton boxes for one shilling each, and thought five shillings too much to give for them. He found no difficulty in overcoming the propolising of the grooves and slides by prising them open with a thin knife. Buttons he thought an abomination, and took them away, winding a cloth round the hives. He thought that three entrances to a hive were a mistake, and that there should be but one entrance. Bees wintered in Stewartons, perhaps, better than in frame-hives, and the boxes were very easily turned over, so that you could see all that was going on inside.

In replying to the remarks made upon his paper, Mr. Bartrum said that he had no wish to place the Stewarton above the moveable comb hive; but he thought that the Stewarton should have a place in the apiary. Bar-framed hives require constant attention: sections must be put on and taken off, the extractor must be in constant use, queen-cells must be cut out, and the hives frequently examined, and a busy man has not time to attend to them. Many persons wanted a hive which they could keep and work without constant supervision, and for such persons the Stewarton was a very valuable hive. No doubt the bar-frame hive was the best for a skilful bee-keeper who had the time and patience to bestow upon it, but the Stewarton was the hive for the busy man, and he was anxious that it should have a place in the bee kingdom.

Mr. T. W. Cowan, in moving a vote of thanks to Mr. Bartrum for his excellent and valuable paper, was quite prepared to allow the value of the Stewarton hive. Management was, however, the great thing after all. With good management almost any hive will succeed. Bee-keepers are unsuccessful because they do not manage their hives rightly. He had had a frame-hive this season reduced to five frames, in each of which there was brood to the top bar, and it had given him some beautiful sections. He advised all bee-keepers to compress their bees with dummies, and to reduce the size of their hives to the number of bees which they contain.

The motion for a vote of thanks was seconded by the Rev. George Raynor.

The Rev. E. Bartrum moved a vote of thanks to the Chairman, the Rev. W. Stuart Walford, whom he commended as being one of the chief promoters of the Suffolk County Bee-keepers' Association, which had attained the distinction of having purchased a bee tent during the first year of its existence. Mr. Bartrum also mentioned the very successful show which had been held this year at Ipswich mainly through the exertions of their Chairman for the evening.

Captain Campbell seconded the motion.

The Chairman, in responding, regretted the absence of the Rev. R. A. White, the Vicar of Ipswich, who had been obliged to leave at the conclusion of the earlier meeting held on that day. Mr. White had achieved great success with his Stewarton hives, and had taken 140 lbs. from one this year. Mr. Walford supposed that success was, as Mr. Cowan had said, to a great extent, a question of management, both with the Stewarton and the Bar-frame.

With reference to a question asked by the Chairman as to the efficacy of tallow in keeping away the bee-moth, Mr. F. Lyon stated that he had found a mixture of tallow and black-lead very useful for that purpose.

THE STEWARTON HIVE.

By the Renfrewshire Bee-keeper.

While perusing with much interest the Rev. E. Bartrum's excellent lecture in last month's *B.B.J.* on my favourite hive, the Stewarton, I could not but regret that other engagements prevented me being present to hear it delivered, when I would have been delighted to have borne the brunt of the fire of criticism to which it was subjected, down to its most minute part—the buttons; and having seen a report of the discussion which followed, I would take the earliest opportunity of craving a little space to try and remove some of the misconception-smoke left hanging around it.

Having for many years disinterestedly endeavoured to spread more widely a knowledge of the splendid results obtained by the hive and system of bee-management I had done something to improve, I felt the fullest sympathy with the rev. lecturer, who, true to the instincts of his profession, finding its great value, proceeded to proclaim it before his brethren of the British Bee-keepers' Association, and what he has so well said leaves but little to supplement.

Although the wooden covers I use keep the hives nice and dry, parties to whom their cost is an object must understand that is an outlay not absolutely necessary in

conjunction with the hive; a good thick straw hackle is a useful although not so good a protection, provided the hive-board stands as it ought, some twenty inches above the level of the ground on a 6-inch fire-clay fawcet pipe sunk 16 to 18 inches.

There should be three entrances to each body-box, and these I regularly widen to 5 inches long by three-quarters of an inch deep. All are kept closed with the sliding doors save those in the lowest box, and there the side ones are similarly kept shut except during the full heat of the supering season. The central door, or 'mouth-piece,' I divide into two equal portions, for regulating the entrance in the centre. So placed, and the hive drawn close to the cover-front, bees are effectually excluded from the cover. No doubt in hives destined to swarm, drawing back the hive and admitting the bees afford them the fullest protection from sunshine and shower; but in non-swarming Stewartons these idlers are much better drawn up to secrete wax on the guides of added supers. When once the supering season is fairly on, the hive is stripped for action—the cover removed entirely, the hive drawn back to the flush end of the board, thus giving the fullest alighting room in front and keeping out damp behind. From the iron weighing-hooks in the body-box I cord tight down the supers to prevent their displacement by the four-ply thick crumb-cloth or other warm woollen stuff folded and tied tightly around them. The moveable top of the cover is then set on, and from its vase on the apex is suspended, on the sunny side, a full-sized Archangel bast-mat. After the three doors of the lower box are fully drawn, thus shaded with 15 inches of door space for air, egress, and ingress, and ample and gradual expansion of super space, swarming is reduced to the minimum: indeed during the bypast season not a single swarm attempted to emerge from one of my many Stewarton stocks: and to see such colonies at full work is a real pleasure to every true lover of the bee. But to return to the discussion. The assault was led by

Mr. T. W. Cowan, who considered the Stewarton as an intermediate step between the straw skep and the moveable comb hive; but the Stewarton under discussion it so happens is a moveable comb hive. It is against all rule to have any entrance but through the lower body-box. He admitted the frames and bars are fixed with half-inch brass screws by makers to retain these in position on their journey, and are still useful for inversion to receive a swarm up in a tree: but so soon as the hive is peopled, the screws are at once withdrawn, and at the present moment there is not a single screw in my apiary, but had I occasion to send a hive away or to the moors, to keep all safe I would certainly reinsert them. I prefer sweeping the bees from the combs of my hives, but for those choosing to drive the screws afford the facility. I am glad to hear that one of the best and most original features of the Stewarton hive, excluding queens from supers, has been copied in square frame hives: presumably by zinc excluders, which was all along effected in the former so simply by the slides. The Stewarton being essentially a strong hive system, its disciples are fortunately better accustomed to expand than 'contract the space;' and as for 'spreading the brood,' they more wisely leave that to be regulated by the numbers and instinct of the nurse bees. I entirely dissent from Mr. Cowan's theory that bees will extend their combs and multiply more rapidly in a square than a Stewarton hive, having in novitiate days abundantly proved the contrary. The heat emanating from the central cluster ascends to keep the brood overhead warm, which liberates so many more bees to increase the cluster. Wax-secreting and comb-building progress more rapidly in a downward direction than when the cluster is divided and combs built at either end. With regard to the question of sections, I quite agree with Mr. Bartrum that Stewarton supers give more honey with much less trouble. Mr. Cowan, I fear, labours under a misapprehension as to the completion of the Stewarton supers: the bees ascend and cluster on the end bars, and from thence the work gradually progresses towards the centre, where the windows are purposely placed; and it is an axiom in the Stewarton system, that so soon as the central combs are seen to be sealed out, the super can be safely removed complete; and in all my experience of this hive I do not remember meeting with a single exception to the rule. But I have had much trouble when I wrought square supers on square hives, of unsealed end combs and corners. To contrast harvest results, one year and one district of country against others, affords no criterion as to the comparative value of any hive or system.

Mr. Cheshire followed by saying he did not feel disposed to attack the Stewarton at all sharply, and it would be very ungrateful if he did after finding for him the premier super in the honey famine season of 1879—the proof of the pudding is at all times the eating of it. I was first attracted to bee-keeping through opening up several colonies long established in the roof of the house here, and there learned the true 'Philosophy of Hive Shape' in the five or six feet stretches of comb I measured in the narrower, while the wider they as heartily eschewed, as they afterwards did the collateral additions of my 'Pavilions of Nature' of the much-vaunted Nutt's hive; and every conceivable plan of lateral extension the enthusiasm of the novice could invent proved an utter failure, the bees persistently carrying the brood-combs downwards and the honey-comb upwards, with the regularity of the piston of a steam-engine. When I found the Stewarton, I discovered what I considered the nearest approach to their *beau ideal;* it yielded me harvests unknown before for quantity as well as quality: for, after all, what is the bee-keeper's great desideratum? —the maximum of honey with the minimum of trouble, other points follow after, as subsidiary. There was now no removing the end combs in autumn as in the square hives, no contracting of space in spring, but expansion into lower box, the usual large surplus store saving all feeding; only trouble, a pleasant morning's task in putting on and afterwards removing filled supers. There are, however, a class of bee-keepers who must continually be pottering amongst their bees; such disturbed hives don't usually give great returns. According to a recent work the 'bee-farming' of the future is to be carried out in 12-inch square boxes, no supers tolerated; the greatest harvests known are to be obtained by continually passing the end frames through the extractor as quickly as gathered. On the farm, fancy already hears the stillness of the summer evening broken by the rattle of the tin extractor and tin milking-pail as they are passed on to the bee-house and cow-house respectively; and our industrious little favourites may thus be saved the second swallowing, flitting, and disgorging task. Mr. Pettigrew depicts them as nightly engaged in performing thus in his big straws; but many of us may feel thankful we are not bee-farmers.

Applying the moveable comb principle to my roof-bees, and believing in it from the beginning, I carried it out with every part of the Stewarton from their frames; I raise my queens in nucleus four-frame boxes. These, when full, are transferred to form young colonies. End combs I had at first in frames similar to the centre, but afterwards dispensed with them, finding those end combs being carried out to the sides helped to concentrate the central heat of the brood-nest better, and isolate more effectually the breeding from the honey-storing department. A thin-bladed old table-knife easily severs any little comb attachments of those end combs should a queen have hidden there from off the brood-nest.

I quite agree with Mr. Cheshire as to the modern frame hive being practically inelastic, and to my view, for practical bee-keeping a grave fault, the inner being inseparable from the outer shell—moveable combs in a

hive fixed to legs and cover. A friend in the island of Bute last spring using some Perthshire frame-hives consulted me as to the best plan of joining a queenless to a queened stock, and I suggested sprinkling a little flavoured syrup, and after puffing smoke to both, to place the queened one on the other, so easily managed with the Stewarton; but I had a reply that the legs forbade the union. I had promised to Italianise a couple of stocks to the same friend, but as the hives had to be conveyed some distance to it, and afterwards by steamer, then rail, and a good way from station here. As they stood it was out of the question; so the bee-keeper had to incur the expense of having two hives made, with boards to carry the stocks, and when shut in a man took both on his head.

It would be a most hazardous procedure to move a Stewarton colony anywhere *unbuttoned*.

Rev. George Raynor, by drawing any one slide on top of a Stewarton, and then moving the frame closer to blank side, the next can be lifted out, if preferred, without drawing at all, and so on. Slides never gave me any trouble; by drawing one either side, any particular frame can be inspected without disturbance to rest. Tallow and black lead are unpleasant associations for a bee-hive.

Captain Campbell is perfectly right in saying the Stewarton hive is a convenience, and gives little trouble. Possibly hives made so cheaply as a shilling a-piece may lack the exactness of fit as to render the buttons 'an abomination,' and from the same cause ventilation may be so amply provided as to justify the triple entrance 'a mistake.' I work two sizes of Stewarton supers; one 3½ inches deep contain 15, the other 4 inches, 20 lbs. of comb honey. It may not be generally known that the Stewarton, if not the first hive to carry a super, has possibly a yet better claim to carry the first sectionals. Its supers, twenty-five to thirty years ago, I am informed, were commonly divided into halves and quarters; but on turning my attention to improve this hive I preferred to retain the super entire as 'a crate,' and to render its seven combs moveable, as seven sections. I give away most of my honey to friends in this way attached to the bars, and it is commonly so sold in Glasgow Italian warehouses in single bars at a higher price per lb. than the entire super brings. The bars can be replaced at 1*d.* each.

APIARIAN NOTES FOR 1880.

By Mr. Robert J. Bennett.

(*Read before the Natural Society of Glasgow.*)

After alluding to 1879, which proved to be the worst season experienced for the previous twenty years, and which left to the present year a very unfortunate beginning for bee-culture, Mr. Bennett referred to the advice he then gave to all who had stocks left to have recourse to a generous artificial feeding if they wished to preserve their bees from starvation. He then proceeded to notice the mode in which he managed his apiary during the year. In January, which opened unfavourably, there were some fine days, of which the bees availed themselves; and by the middle of February breeding had commenced in most of the hives. In March, which is generally a trying month, the weather was favourable until about the middle, when a sharp frost set in, which greatly retarded breeding. April was bleak and cold until the 18th, and stimulative feeding had to be resorted to. May opened well, and the hives were full of bees, but feeding was still necessary. On the 27th Mr. Jones, from America, arrived in London from Cyprus and Palestine, where he had been for a few months to procure queens. Two were ordered from Abbott Bros., of Southall, and arrived last month, and are doing well, and give promise that next season a pure swarm may be shown in an observatory hive. Bees continued to swarm until near the end of July. Being in London, the British Bee-keepers' Show was visited, and it was found that considerable progress had been made during the last three years. By August, swarming having ceased, the bees began to enter the supers. These were rapidly filled during September, and by the end of the month one Stewarton hive had reached the enormous weight of 165 lbs. The harvest was the finest Mr. Bennett had ever seen, and those who kept their bees strong reaped the benefit. His apiary has repaid all the outlay and original cost, and all the stocks have been put into winter quarters with more store in the hives than they have had for many seasons. If all goes well, there should be early swarming in 1881.

HERTFORDSHIRE BEE-KEEPERS' ASSOCIATION.

The Annual General Meeting of this Association will be held at the Town Hall, St. Albans, on Tuesday, January 11th. The Chair will be taken by the President, the Earl of Verulam. The following important subject will be discussed at this meeting, viz., 'The advisability of making arrangements for annual inspections of Members' hives and bees by the Association's expert in the spring and autumn of each year.' This Association numbers nearly 300 members.

A CONTRIBUTION TO THE PHYSIOLOGY OF THE BEE. By Dr. Dönhoff.

(*Continued from p.* 146.)

2.—On the Derivation of the Organic Powers of the Bee from Sugar.

Formerly it was believed that the motive powers of the muscles were derived from decomposition of muscular tissue. But when Julius Robert Mayer had made us acquainted with the greatest of all the laws of Nature, the principle of the conservation of energy,—when we had learned to understand that forms of energy are transmutable into one another, it was found that the powers, which are set free in the decomposition of muscular tissue, do not suffice to explain motion. The chief powers, which are transmuted into motion, were now sought in fat and sugar. The empirical proof, especially for the bees, and according to analogy for other animals, is given by the following experiment: Take a bee from the hive entrance, enclose it in a glass at a temperature of 25° Cent. (77° Fahr.); after an hour and a half it is incapable of flight; after about two hours and a half it is dead. In a higher temperature it dies earlier, in a lower one later. The honey which it had in the honey-bag is used up. If the bee has become incapable of flight, and is thrown up into the air, it falls down perpendicularly. I let it now take its fill of syrup. After about three minutes and a half, if I throw it into the air, it does not fall down again perpendicularly, but diverging about a foot from it; after another half-minute it falls yet further away; after some minutes it ceases to fall, and flies to the window. But if a bee has given to it, instead of sugar, pollen and water, they do not affect it; its capability of flight is not restored—it dies. In the chyle-forming stomach there is still to be found a supply of albumen. If flight resulted from decomposition of muscular tissue, the capacity for flight could not have ceased, since the muscles are intact, and albumen is in the stomach to replace wasted tissue. Motion is restored by sugar, which

is not one of the elements of muscular tissue, but is consumed in the blood as sugar, or as sebacic acid derived from it. Muscular contraction arises, therefore, from combustion of the sugar, which with, and in the blood, is imbibed by the muscles. Since without sugar death occurs, it follows from the experiment mentioned, that with the bees not merely muscular power, but similarly all powers of animal life (the sense of feeling, brain-power) as well as all powers of vegetative life (cell-formation, glandular secretion, &c.) are derived from sugar; that, according to the principle of the conservation of energy, the organic activities of the bees are transmuted forces of tension, which were contained in sugar. The animal machine of the bee is built up from the albumen of pollen; it is set in motion by the sugar of honey, like a steam-engine is built of iron, and is set in motion by coal. With this, let it be noticed, that among all known animals the bee is the one which is least able to fast. A bee dies without food within* two hours and a half, the house-fly in two days. Dr. Tanner fasted forty days, and tortoises can fast for a year.

(*To be continued.*)

PRICE OF HONEY IN IRELAND.

An Unpleasant Joke. — Cornelius MacCabe, 3 Chatham Row, honey-dealer, processed Mr. Richard Atkinson, of Abercorn House, Charleston Road, to recover the sum of *11.* 14*s.* 6*d.*, for honey sold and delivered by him to the defendant at his request. The complainant alleged that he met the defendant at the Bailey Tavern, Duke Street. The defendant purchased a cock (23 lbs.) of honey, and directed him to leave it at Wm. Scallon's public-house, Ranelagh, addressed to Mr. 'Snooks.' Complainant did so, but defendant afterwards denied he had ordered more than a pound, at 1*s.* 8*d.* The remainder of the honey still lies at Mr. Scallon's establishment. The complainant identified the gentleman who had given him the name of 'Snooks,' and he was examined. He said his proper name was John Atkinson. Mr. O'Donel: It was most improper to have given this poor man the name of 'Snooks.' Mr. Ennis: This gentleman is known in Ranelagh by the name of 'Snooks,' and his taste is of such superior nature that he has himself assumed it and answers to it. The defendant at first denied having made any purchase, and afterwards admitted he might have purchased 1*s.* 8*d.* worth. He gave complainant the name of Snooks. Mr. Scallon was his grocer, and he was known there by the same name. Mr. O'Donel said if Mr. Snooks meant his interview with the complainant as a practical joke Mr. Atkinson would have to pay for it. He ordered him to pay *11.* 14*s.* 6*d.*, the price of the honey, and 10*s.* 6*d.* costs, to go to complainant, but he (defendant) could now enjoy the honey. — *Freeman's Journal, Nov. 23rd.*

* This statement probably needs more qualification than is given to it by Dr. Dönhoff. A swarm of bees, packed for carriage, without food other than they carry away in their own honey-bags, will certainly live twenty-four hours. How long they would live without a fresh supply of food I do not know, as I have never experimented on the subject, but no doubt they would live some considerable time. The queen humble bees live through the winter, not in a nest supplied with winter store of honey, but in hollow trees, or any dry warm corner, where they remain dormant, without food, until awakened by the returning warmth of spring. In the severe weather of winter, the hive-bee remains in a semi-torpid condition, probably at that time taking next to no food. The house-fly, too, like many other insects, lies dormant without food in the winter.—Translator.

SUPERIORITY OF THE ITALIAN BEES.

Mr. W. Crisp, of Chester-le-Street, writing to the *Newcastle Weekly Chronicle*, of October 9th, gives the following excellent summary of the merits of the Italian bee:—

'In reply to J. Parker, Wolsingham, who asks for information upon the Italian bee, I have great pleasure in giving him my own personal experience on the subject. Some years ago, when controversy ran high amongst apiarians as to the merits and demerits of the Italian *versus* the English bees, I was induced, from the glowing accounts of dealers describing the beautiful golden-yellow bees to invest in a swarm; and golden they really were—in price. I was sadly disappointed, however, in finding the so-called golden-yellow queen to be almost as dark as an old English one. Not to be disheartened, I set to work to make the most of my small swarm of Italian bees; and to this end I selected one of two hives that were about equal in combs and weight, the combs being in the selected hive only about half way down. I drove one and added the black bees to the other, thus virtually doubling the black stock. I then put the Italian bees into the hive just vacated by the black ones. In a few days the Italians had their combs down to the bottom of the skeps, while little perceptible difference was made in the black stock. It was only indifferent weather, but each stock had the same circumstances to contend with, and this little evidence of the superiority of the Italians over the English at once made me decide in their favour. The result was, that I dethroned all the black queens and Italianised my whole apiary. It was a work of some considerable time, from the difficulty of manipulating the straw skeps. In the following year I adopted the bar-frame hives, transferred my bees to their new house, and since that time experience has confirmed my opinion of the usefulness of the Italian bee and the immense superiority of bar-frame hives. We are told that a "thing of beauty is a joy for ever;" and this is my first point in favour of the yellow bee. Although sadly disappointed in my first Italians, I had nothing to regret in their working qualities, and I now possess a strain sufficiently yellow to be mistaken recently by an old bee-keeper for wasps. In colour alone, to a scientific bee-keeper, they are invaluable, for by that means has the problem been solved that drones come from unimpregnated eggs. However, space would forbid my entering upon the whole mystery of the internal economy of bee-hives; I will, therefore, confine myself strictly to the question of Mr. Parker, and will only digress to notice the the superiority of the first cross or half-breeds —Italian and English—over all others. Italian bees are smaller than the English species. They are nearly yellow in colour, with three copper-coloured abdominal bands, plainly distinguishing them from the ordinary English bee. They are also much more rapid on the wing than is the English kind, and, what is more important, they have longer tongues, which enable them to extract honey from flowers which English bees cannot touch. Anyone can test this by a simple experiment. Take two pieces of wire-gauze, bent to an incline, and then smeared with honey on the top side. Place this upon the feed-hole of a hive of black bees, and carefully mark how many rows of holes are cleaned off. Then place it above an Italian hive, and they will clean three or four rows further up the inclined plane. Although an ardent admirer of the yellow bees, I have always kept one black stock, and I often try the merits of the two sorts. Last season afforded me strong evidence in favour of the Italian bees. In the autumn of last year I tried an experiment in breeding bees during the severe winter with a very fine Italian queen. From adverse circumstances, and the folly of trying to improve upon nature, the ex-

periment was quite a failure as regards a good stock of bees in the spring. The experimental hive was lowered down to four bars from a twelve frame-hive through the mortality in the young bees; yet, with careful treatment, this handful of Italians have overtaken their black rivals. I have taken a good swarm from them, together with several frames of brood for queen-raising purposes. So striking was the superior working of the Italians, that a young bee-keeper, a friend of mine, unhesitatingly gave in his adhesion to the yellow bee. In point of temper, the pure Italian bee is quieter than the English species; but when once roused they are little demons, and it takes some time before they forget their anger. If I had to decide as to the usefulness of the different kinds of bees, I should favour the first cross with Italians and English upon all points but one, and that is temper. My experience for several years has led me to regard them as the most vicious little rascals under the sun. In working qualities they far outstrip both the pure sorts. They are larger and stronger, with one broad copper-coloured band and a narrower one on their abdomen. They swarm earlier—as early as April in some cases. I once had four natural swarms from one stock, together with a quantity of honey that would warm the heart of a straw "skeppist." The Italian bees are often blamed for robbing, but all bees act upon the principle that might is right, and thus the Italians are not worse than the blacks. One thing, however, I have noticed, and that is, that the black bees will freely allow the Italians to go into their hives; but I have never yet seen a black bee enter an Italian hive without being immediately expelled by two or three yellow-jackets. If honey or syrup is carelessly spilled about, the Italians are first to find it; and when foraging in the fields and a sudden change in the weather takes place, they hurry home in a mass, and for a few minutes completely block the entrance to the hive, while the English breed comes home more leisurely. I have observed, too, that the Italians ceased breeding much earlier this year than did the English bees, their perception of the shortness of food restraining them from raising any more mouths to fill—an example which the *genus homo* might well follow. It is principally at swarming-time that the golden beauty of the Italians is most conspicuous, for, having three days' store of honey in their honey-bag, they appear almost semi-transparent. I may here take the opportunity of correcting an error in the letter of "Apiary" in last week's *Notes and Queries* on "Bee-driving." Your correspondent is in error when he states that "alarmed bees seek oblivion to their fears by eating to excess." Their object is to provide themselves with stores in cases of emergency, so that they may live and commence comb-building in their new home. Their conduct may be regarded as a common act of prudence suggested by the alarming smell of fire. Few pursuits of the kind give so valuable a return as does bee-culture, for, beyond the first outlay, it is all profit, if properly followed; and the study of the habits of those insects teaches many lessons of wisdom which mankind stands much in need of.'

A HINT TO HIVE-MANUFACTURERS.

Mr. A. Cockburn, of Honey Grove, Cairnie by Keith, N.B., 'a practical hive-maker of many years' experience,' has issued a sheet containing descriptions of the hives he manufactures and the prices at which he offers them, which are exceedingly low; and in respect of No. 7, a complete hive, price 5s., he says, 'I want a thousand of them scattered over the north; if you are ignorant of their management, order the *British Bee Journal* from the Editor, Southall,'—a direction which will help to do good and cannot well do harm, though we say it as 'oughtn't to.'—Ed.

Correspondence.

*** *These columns are open to subscribers, so that their queries, replies, correspondence, and experiences may be* fully and faithfully *recorded; and for the discussion of all theories and systems in Bee-culture, and of the relative merits of all hives and appurtenances, that the truth regarding them may be ascertained. The Editor, therefore, must not be expected to coincide with all the views expressed by the various writers. All Correspondence is addressed to the Editor.*

CHESHIRE ENTRANCE.

I have had during the last two or three years abundant opportunities of testing the value of a simple arrangement which I have often recommended for checking or curing robbing, a trouble, which at certain seasons, especially if the management be not of the most skilful kind, may bring both damage and destruction amongst the stocks.

The illustrations accompanying this represent the form of entrance to which I refer, and of which

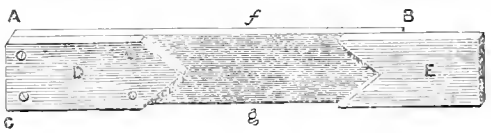


Fig. 1.—Porch, under side, *door wide*.

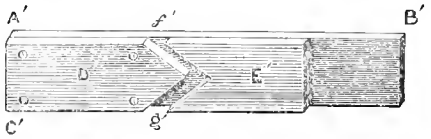


Fig. 2.—Porch, under side, *door narrow*.

Fig. 3.—Porch, front view, *door narrow*.

I have now so fully proved the efficacy, that I am adopting it as an integral part of my hives, allowing it to supplant the well-known sliding doors.

The narrowing of the hive-mouth, of which the latter admit, although helpful to an attacked colony, is not, by any means, at all times sufficient. The excitement prevailing, and the large number of bees parading the alighting-board, are hindrances to the defenders, since every bee met has to be examined in order to determine the question of friend or foe, and whilst all this is going forward, the crafty thieves are likely again and again to gain an ingress. Should they be detected as they pass the narrow entrance, an immediate fight, in which the combatants roll over and tumble to the ground, leaves 'the breach unmanned,' giving a chance which is nearly certain to be taken. Thus often with a door narrowed conquest is only hindered, not prevented. If, however, the mouth have the form of a tunnel given to it, the combat just referred to effectually *blocks* all entrance until the marauder has been ejected, whilst to run the gauntlet successfully defender after defender must be passed.

Before explaining the illustrations, let me draw attention to a matter of special moment at this

period of the year, I mean the loss involved in allowing light to shine directly into the hive. When snow covers the ground, the bright glare the sun occasions when the clouds part, deceives the poor inhabitants, and a rush for the golden glory without ends in causing multitudes of poor benumbed insects to fall never to rise again. In the form of entrance referred to I have lately made a small modification, so that it not only saves from robbing, but also effectually prevents the just explained evil.

A long thin slip, A B C, fig. 1, about 2 inches wide, and 14 inches long, has a second piece, D, also 2 inches wide and $\frac{3}{8}$ inch thick, cut to a point and fixed beneath it, while E (which may be made without waste of wood from the same piece as supplied D, as its form shows) is left free. These are placed in front of the hive, the under side shown in fig. 1 lying on the alighting-board, the bees then passing from *f* to *g* through the tunnel formed to which the angular point and the indentation in D and E respectively form no impediment. Should, however, fighting be detected, or circumstances render an attack probable, or should the issue of a swarm be followed by cool weather, the contraction of the entrance will be desirable when E will be pushed towards D, taking up, more or less, the position seen in the second wood-cut. The tunnel form *f g* will now present the appearance seen in fig. 3. Robbing will be prevented, for the reasons previously given, while in the winter sun-light cannot possibly enter, and in addition the ingress of chilling puffs from a pulsating wind will be much checked to the great benefit of the colony. A small stud placed on the under side of A B C, opposite the point of D, will prevent the pieces from being pushed so near to each other as to endanger the passage of bees altogether. While a hive is under enforced partial closing during the summer, ventilation at the top by placing perforated zinc over an opening in the quilt will be desirable, if not even indispensable.

The cottager may add very easily to his skep an improvised tunnel should occasion require it. Last year I had an opportunity of saving for a primitive bee-keeper a stock from destruction, before which, he said, 'The bees was always a fightin'.' I found in the somewhat rugged pathway two pieces of thin tile, one of which I broke in half, and placed the parts in front of the skep-mouth with the newly-separated edges about a third of an inch from each other. The other piece by being placed over these formed the protective tunnel at once.

The hope that others may find this entrance as useful as I have done, at once supplies my reason and my apology for giving it.—Frank R. Cheshire, *Avenue House, Acton.*

THE IRISH ASSOCIATION.

I should be glad to have the addresses of a few Dublin bee-keepers with whom to correspond on bee-culture. I am trying to form an Irish Bee-keepers' Association, but find it uphill work, owing to the difficulty of getting names and addresses of bee-keepers. Up to the present, about twenty of the bee-keeping fraternity (including Sir W. Gregory, Captain Lambert, of Galway, and half-a-dozen clergymen) have promised to join.

By last *Journal* it will be seen that the Committee of the Royal Dublin Society have given free space for the erection of the Irish Bee Tent at their Spring Show of 1881; and I feel confident that at the July Show the Society will offer prizes, as I have suggested.

Meantime, I hope a few of the English hive-makers will send specimens of their hives, &c. to the Show, which takes place next April. Irish bee-keepers have not the same opportunities as their English brethren of seeing hives at every price, from the lowly 5*s.* to the lordly 5*l.*; and as the Show lasts for a week, and attracts visitors from all parts of Ireland, I am sure large sales would be made, and their enterprise in sending so far be rewarded.—Robert Sproule, *Clonliffe Terrace East, Clonliffe Road, Dublin, Dec.* 9, 1880.

[The establishment of an Irish Association in connexion with the Royal Society is now in the hands of the bee-keepers themselves, and we trust the efforts being put forth will be unanimously seconded. Every well-wisher to Ireland should subscribe to so good a work, and bee-keepers especially should communicate with Mr. Sproule.—Ed.]

THE IRISH HIVE.—STANDARD FRAME FOR IRELAND.

I take the liberty of expressing a few remarks on your Irish hive, and also of suggesting an alteration in its size; and should you think I am correct, and be inclined to adopt the same, I would say that the hive should then be looked on as the Irish Standard hive, to be used by all Irish makers of hives when they come before the public.

To any one who reads carefully the *Handbook* lately published by the British Bee-keepers' Association, it must be evident that the best way to make honey for exportation is in sections, say American sections as mentioned. Therefore, to facilitate this object, I propose that the frames of your Irish hive be made a few inches deeper, so that these at back of brood-nest will contain six 1-lb. American sec-

1	2	3
4	5	6

tions. I think this would make the hive about ten inches deep, so by the way the British Bee-keepers' Association show us to calculate the size of a box for a swarm, we get with ten frames $15 \times 15 \times 10 = 2250$, or 250 over what they say is the smallest size it should be: any one thinking it too large can use only nine frames, making only 2020, or eight frames, and reduce it still more. But I should think it would be a nice sized hive with ten frames, and one that would be a great boon to Irish bee-keepers who must export their honey to get a paying price for it, particularly those who live in the country—away from a good honey-market. In

every other way I think your Irish hive capital—internally.

I hope you will not think it presumptuous in me, a beginner, to suggest so much to one of your experience, and that it may lead to a really useful hive being made as a standard for the making of honey in the best way for transit, and in the most approved manner for sale.—ALFRED DAVIS, *Mulcair, Ballyclough, Limerick.*

[There is already more than sufficient space in the hive for six 1-lb. sections, as suggested. The sections are only $4\frac{1}{2}$ inches square, while the hive is $14\frac{1}{2}$ inches wide, and $8\frac{3}{4}$ deep. A divider (excluding, or otherwise) placed in rear of the brood-nest would enable one to make a pile of sections to suit any occasion, and not being in frames they would be easily comeatable for removal. We have already stated that we prefer that the hive should be longer than the one described last month, so as to be available to meet all possible contingencies. Large hives, we are aware, often frighten the inexperienced, because they cannot imagine it possible for a swarm to fill them; but there is no more harm in having spare shut-off space in a hive than there is in having a spare room in a dwelling-house. We doubt the policy of creating a new size of frame for Ireland, though it is a question that we would urge the Irish Association to determine upon forthwith. It is really a serious matter, and if taken in hand before the number of hive-makers increases in that country, something like uniformity may be secured, and much that will be vexatious prevented. 'Years ago' we urged the adoption of a 'Standard' frame by the British Bee-keepers' Association, but without avail. We foresaw that, with the *Journal* and the Association at work, bee-keeping would rapidly increase, and hive-makers would spring up all over the country, whose hive-frames would be as varied as their localities, no two being alike, and consequently would not be interchangeable. We proposed then, as we suggest now to the Irish Bee-keepers' Association, that they should recognise only one, or at most, *two* sizes of frames; and that at all their competitions, prizes should only be awarded to such as contain frames of the sizes stipulated for the respective classes. An arrangement of this kind would inflict no hardship, it would not hinder the manufacture of other sizes if people chose to make them; it would not interfere with 'principle' in the construction of hives, nor with the production, exhibition, or sale of honey; but it would be an immense boon to future bee-keepers in securing for them a known size of frame that will be interchangeable with others. Eight years ago there were scarcely eight frame-hive makers in England; now, thanks to the *Journal* and the Associations, there are ten times that number, no two of whom make hives alike, or have frames that are immediately interchangeable. The subject is worthy of the gravest consideration. Ireland is on the threshold of bee-culture, and her Association can make her first steps safe ones if they will.—ED.]

THE IRISH HIVE.

In your description of the 'Irish Hive,' I see you adopt the usual fillets nailed on to support the roof and form a plinth to overhang floor-board. Sometimes these are nailed on to the cover overlapping the body box. May I take the liberty of mentioning how I make my hives, as I find fillets catch the wet running down, and if not very carefully fitted and kept well painted are snares and delusions by letting in wet. In double-cased hives (as all mine are) I make the outside case, back and sides $\frac{3}{4}$ inch deeper than the inside, so as not to require a plinth. The 'super covers' (with gable ends high enough to admit not only of 'sections,' but the feeding-bottle if required) are made $\frac{1}{4}$ inch larger and wider than the body-box, having the board which forms the porch (full width of front) screwed to the lower edge of the front of the cover, instead of being fixed to the body-box. In place of four screws (as you suggest to support the roof), I use $1\frac{1}{2}$ screw eyes, $\frac{3}{4}$ from upper edge of front and back; they form as good hinges as your screws, and when neither sections nor the bottle are in use, can be removed with the finger and thumb, and the cover being $\frac{1}{4}$-inch too large, slides down easily over all, adding warmth and effectually excluding rain and snow, exposing a smaller surface to the wind and preventing the possibility of blowing off. The porch-roof then covers down so close to the alighting board that no sunshine enters the door to tempt the bees out. I cover all my roofs (of whatever shape) with two layers of stout brown paper lapping over the edges and nailed to the thickness of the board and screwed on the top with two or three rows of $\frac{3}{8}$ tacks. I give it a good coat of linseed oil first, then two or three coats of paint. Those in use for two years are as sound as ever. The paper is warmer, lighter, and far cheaper of course than zinc, which often warps, draws the nails and lets in wet.—COUNTRY PARSON.

[We are deeply grateful for every suggestion intended to be helpful, and cheerfully give publicity to the foregoing. The arrangement of the roof to slip down over the body-box, for winter protection, was before the public in 1878, as will be seen by reference to Abbott Brothers' catalogue of that year, wherein hive No. 4 is described as having 'floor-board, quilt, entrance-slides, and roof with deep compartment, which will cover the supers in summer, and in winter will slip down over the hive and form an outer protection.' The arrangement was not, however, approved, for the quarter-inch space, the 'play' between the roof walls and the hive sides gave ants, earwigs, and moths access to the super space under the roof, and consequently it was abandoned. The roof of the Irish hive rests upon a solid ledge running round the hive, the bottom edge of the roof walls is throated (grooved) and overhangs the said ledge, and the rain must drip clear of the floor-board. The deepening of the side walls of the hive so that they shall enclose the floor-board is open to objection in regard to vermin, for the play space between them offers harbour for wax-worms, and there is the fact that the hive can only be set upon its own floor-board: a minor objection, perhaps, but one that, with due deference, we think should not exist in a hive that is intended for use by everybody. The idea of lowering the porch board is a good one, and it ought to be done before winter sets in, or bees may not get used to it, and may alight upon, instead of beneath it.—ED.]

THE IRISH ASSOCIATION.

I enclose a list of bee-keepers who have promised to join the Irish Bee-keepers' Association. I feel certain the list would have been longer but for two causes. One is the difficulty in finding out names and addresses of persons who keep bees, in order to send a circular to each. The other is the working of the Land League, which has spread over the country like a pestilence, and completely paralyzed every movement, social or otherwise, for the im-

provement of the condition of the people. The last cause I hope will soon cease to exist, and the notice in your *Journal* will, I feel confident, remove the first.—ROBERT SPROULE.

Sir W. H. Gregory, Coole Park, Gort; Captain Lambert, Fort Eyre, Co. Galway; Colonel Nunn, Rostrevor; Rev. G. A. Procter, Tullamelan Rectory, Clonmel; Very Rev. M. E. Holland, O.D.C., Gayfield, Donnybrook; Rev. J. Aldridge, The Vicarage, Eyrecourt, Galway; Robert Brown, Donoughmore, Co. Tyrone; David Brown, Donoughmore, Co. Galway; Brother Joseph, The Abbey, Loughrea; Rev. T. Lindsay, Ballinlanders Rectory, Knocklong; Ven. Archdeacon Cather, Westport; Rev. R. Smith, Glasson, Athlone; J. Traynor, The Cottage, Tinahely; R. Sproule, Cloncliffe Terrace, Dublin; John Greene, Main Street, Wexford; Archibald Turrettin, Newtown, Rostrevor; Robert Sanderson, Edenderry; James H. Shaw, Newry; James Long, Saintfield; James Johnston, Dundalk.

IRISH BEE-KEEPING.

I forward you another letter bearing on your visit with Bee Tent last summer:—

'*Royal Apicultural Society of Ireland, Dec.* 1880.—SIR,—I am directed to inform you that your letter was duly laid before the Council of this Society. Should there be an "Irish Bee-keepers' Association" formed, the Council will grant permission for their Bee Tent to be exhibited in the show-yards. The British Bee Association sent over their Bee Tent to the late Royal Show at Clonmel, and it came on to my Queen's County Show at Maryborough, and then went to the north of Ireland. It was the source of considerable attraction.—I remain, faithfully yours, SEYMOUR MOWBRAY (Secretary).

'*J. Traynor, Esq., The Cottage, Tinahely.*'

I have not had enough honey to supply the demand; and Mr. Masters' traveller called upon me here and told me his firm used up annually 10 tons of honey (run), or extracted, they would not take less than ton quantities: no comb honey. And he told me he would give our Association a chance to let him know when any would be for sale. They charge 1*s.* per pound retail. Got a few tons from Mr. White, Waterford, remainder from Liverpool. I am obliged to send up to Dublin for comb-honey for a few gentlemen in the district. I can now get a handsome price annually myself for about 1 ton comb, in hive or sections; and yesterday I had to part with two splendid bottles of run-honey I was keeping for myself: I was ashamed to take any more than 1*s.* 3*d.* per pound for it. So you see how I am pushing things on and adhering to your advice in the *Journal*. Association going on fairly: twenty members enrolled.—J. TRAYNOR.

THE BEST HIVE?—OUTSIDE OPINIONS WANTED.

Please ask in your next issue, under the head, 'A Beginner's Difficulty,' which is the best hive to buy? If bar-frame, what size to make? If skep, ditto; paying due regard to efficiency and economy. —A. W. DAVIS, *Mulcair, Limerick.*

[We shall be very glad to receive the opinions of all who will favour us with them for publication. The *Journal* is open, and the subject an interesting one: but we hope those who give their opinions will state the nature of the localities in which their experiences have been gained.—ED.]

CALEDONIAN APIARIAN SOCIETY.

We have had most awful weather this long time past, but so far as I can learn, stocks are in fine condition. I am happy to add many kind friends have come forward to wipe away the debt of the Caledonian Apiarian Society. Up to the present time the following subscriptions have been sent me, viz.—

Highland and Agricultural Society, per F. N. Menzies	£20	0	0
Duke of Argyll	2	0	0
Marquis of Bute	5	0	0
Col. Buchanan	2	0	0
David Tod, Eastwood Park	3	3	0
Alexander Harvie	1	1	0
Thomas Wm. Cowan	1	1	0
A. M. Bayne	1	1	0
R. J. Bennett	1	1	0
	£36	7	0

A few more liberal spirits would soon place us free of debt,—a consummation devoutly to be hoped for.—R. J. BENNETT.

WHAT ARE THE ADVANTAGES OF ASSOCIATIONS?

I think it would be interesting to publish the advantages to be gained by a Bee-keepers' Association. I am glad to see there is one being formed for Ireland, but think the subscription should be only five shillings; anything over that should be looked on as a donation. I don't understand why there should be two classes of subscription—one for ladies and one for gentlemen; it appears to me that any one who subscribes, whatever is the fixed amount, is a *member*, and the question of lady or gentleman has nothing to do with it.—ALFRED DAVIS.

[We shall be glad to hear others' opinions. To our mind the advantages of Associations are self-evident, not the least feature being the formation of a common fund for the purchase of necessaries for promoting the object in view. A Bee-keepers' Association to encourage bee-culture would be powerless without the means of 'showing' the method of improvement; and except by a body so constituted, a bee exhibition would be in the nature of a private speculation, and would be looked upon with suspicion.

Our friends in Ireland will doubtless be able to give a reason for the difference in the amount of subscriptions proposed.—ED.]

MATERIAL FOR HIVES.

In your impression of Dec. 1 (p. 149) anent Abbott's Irish hives you say that 'the manufacture of this hive, outlined on pages 126 and 127 of the present volume of this *Journal*, it will be necessary to procure inch pine for the body-box and floor-board, and $\frac{3}{4}$ inch for the roof, unless yellow deal is preferred as being more economical. We prefer pine for the parts of the hive in which warmth is of importance, as being of a soft texture, it is not so good a conductor of heat as wood of harder grain.' Now the query is, how do you make it out that yellow deal is more economical? Hereabouts yellow deal is about three times the price of white pine,

which is the sort you send out in your hives, so far as I can judge. There are various pines, viz. pitch, red, memel, spruce, white, and yellow, standing in their respective orders of merit, the last named being by far the best for hives. In fact, none of the others should be employed as they are unfit for the purpose. The word 'pine,' as used by you, is rather vague.

Will you kindly explain in your next number, and oblige—J. M. B., *Bishopbrigg, Glasgow.*

[As a matter of fact, hereabouts 'yellow deal' is only about half the price of 'yellow pine;' and 'white deal' is about 33 per cent less than yellow, first quality, but lower grades vary. Yellow deal is sometimes called red pine, and spruce deal is called white. 'Memel' is timber in balk 13 or 14 inches square, and of any length. Each has its particular value for certain purposes, and opinions vary as to them. We have before us a timber-broker's list of goods lying at the Surrey Commercial Docks, and the specifications therein agree with our description; and we can only suppose that the nomenclature in the Glasgow trade differs from that of London, if our correspondent writes from experience. Yellow deal is harder and consequently colder than 'pine;' it contains much more resin and turpentine than the latter, and is very durable, hence it is generally preferred for out-door work. On what grounds our correspondent places the different woods in the order of merit above described we are at a loss to imagine, unless they are technically different in London and Glasgow. Best pine costs hereabouts elevenpence per foot run, eleven inches wide and three inches thick. Yellow deal of best quality is fivepence per foot, nine inches wide and three inches thick. White deals are about threepence halfpenny per foot of the same sizes as the yellow. Our correspondent is a little 'mixed' in his statement of prices. He says first that yellow deal is about three times the price of white pine, of which he says we make our hives; yet in the scale immediately afterwards he puts yellow as the lowest.—Ed.]

WOODEN FOUNDATION.

Your correspondent, Mr. Cowan, in the December number of *B. B. J.*, says, 'Generally when anything new is introduced, and it promises to be of use, there are a number of persons ready to claim it;' or that they have been working at it, and goes on to say that while this is true of England, America is a much greater sinner in this respect, instancing wooden foundation as a case in point.

It is not necessary for the purpose I had in view in addressing you, to mention to whom I think we are indebted for the best inventions in apiculture; but I feel sure that when Mr. Cowan's attention is called to *Gleanings* for 1879, p. 317, August number, he will see that in this case his criticism is unfair, and that wooden foundation had been made and mentioned before he saw that of Mons. Demler, and I believe was only dropped because of the impossibility of cutting out queen-cells, and thus interfering with the large trade in queens, which is one of the specialities of American apiarists. The following is what Mr. Root says:—

'I have succeeded perfectly with a board about one-eighth of an inch in thickness, and the only difficulty now consists in getting these boards perfectly coated with wax on which to make the foundation. For once in the world we have combs perfectly even, and safe from sagging. You can scrape off the honey if you like, and let the bees build in more; but the boys complain that that they cannot cut out queen-cells from them.'

Alfred J. Clarke, 20 *Albert Street, St. Ebbs, Oxford, December* 13.

BEE-KEEPING IN NEW ZEALAND—CORRECTION.

Dr. James Irving, whose work in New Zealand is evidently making rapid progress towards placing bee-keeping on a proper footing there, when in England resided at *Newark-upon-Trent*, and not at Nottingham. This error should be corrected as it may lead to misapprehension if any inquiry should be made as to Dr. Irving of Nottingham, instead of Dr. Irving of Newark. Whilst in England the Doctor contributed a most interesting article to the *British Bee Journal*, see vol. iv. p. 209, 'The Experiences of a Novice.'

ATTRACTIONS TO SUPERS—LONGITUDINAL HIVES.

I should be obliged if you would tell me whether impressed wax attracts bees into the supers as successfully as comb does. I have never had any difficulty in getting bees into supers, and fancy that a great part of my success in this matter has resulted from always putting three or four thicknesses of flannel round them.

It is curious to observe how different different people's experiences are. I had a hive on the Combination principle this year with the frames at the back filled with 2-inch sections. The bees filled three and a half of Lee's Crystal Palace supers placed over the frames of the front part of the hive, and never satisfactorily filled the sections at the back; they were never sealed down to the bottom.

Another curious experience I had this season with two hives, viz. that on taking supers off that were sealed to the outside, I found the centre frames unsealed. The only way I could account for it was, that being in supers immediately over the brood-nest, with only perforated zinc between, these cells had been left open and a provision for the nursing bees.

I am sorry to see that you still let the *Journal* go without subscriptions being paid in advance. You may depend upon it that ready money is the only satisfactory way of business.—Stephen Nicholl, *Llandough Rectory, Cowbridge, 14th Dec.* 1880.

[We have not a doubt but that natural comb in supers is more acceptable and more helpful to the bees than any artificial substitute that can be provided, and therefore more inviting to them when put into supers.

In commending the longitudinal arrangement of frames, we have not condemned the supering, or any other plan, as worthless. 'Bees do nothing invariably,' and they sometimes exhibit a freakishness that is puzzling, but which could probably be traced to natural causes. No one will attempt to deny that bees will store in supers, collateral boxes, or frames, or in nadirs, and they will do so freely longitudinally; and for convenience and simplicity of arrangement and management, we think the last-named system preferable. That the

bees stored largely in the supers proves nothing against the longitudinal principle, while the fact that the bees adopted the latter (the sections) in spite of the supers and the cooling effect their presence had on the sections in the lower stratum, is rather an argument in their favour. Had the supers not been there at all, the bees might have stored double the quantity obtained, at the back of the hive. The last sentence in your letter we perfectly agree with, and should have been some hundreds of pounds better off had it been acted upon.'—Ed.]

A CAPITAL IDEA.

My bees are in good condition, and I have done very well this year: I hope to do still better the next. I am going to have a free Bee-Tea and *Talk* in the early part of the year, inviting all our poor people who are keeping, or who have kept bees, and a friend will come and talk to us, and let us ask questions, and so we shall all learn how to manage better, and to treat our bees more humanely and profitably.—*Haughly, Suffolk, Dec.* 13, 1880.

HIVES AND SYSTEMS.

I am a bee-keeper of nearly forty years' standing. In my early days Nutt's collateral system was much cried up. Then came Dr. Bevan with his bar-hives with boxes, about a foot square and 8 inches deep, and supers the same size. Then there was a rush for nadiring and obtaining the largest quantity of honey. Then the grand step was taken by our county friend, the late Mr. Woodbury, of Exeter, with his bar and frame hives. And now all the rage seems to be sectional supers or the Combination hive.

Do you not think either with the Combination hive, or large supers on the bar and frame hive, you will take a much larger quantity of honey than in the sectional supers? We had in South Devon an exceptionally good year. I commenced with six hives, finished with fourteen, and took 250 lbs. of beautiful honey-comb. It was a troublesome year for swarming. I think, with the free circulation of the *Journal* and favourable weather next year, there will be a great advance in bee-culture.—John E. Adams, *Bellfield Villa, Kingsbridge, Dec.* 10*th*, 1880.

[It is not in human nature to command perfection, and each hill-top gained in the endeavour to reach it but opens out a larger sphere for observation, and shows us other acclivities to be surmounted. Progress towards perfection in bee-culture has been tardy until of late, though bee-keeping has been commended as a profitable pursuit from time immemorial, and even now there are vast districts in the United Kingdom where the simple method of 'supering' to obtain surplus honey is not practised, but the brimstone-pit is held to be the *sine qui non* of success. The idea of providing separate receptacles in which the bees could store their honey in virgin-comb is comparatively modern, but was the starting-point for real improvement. Nutt's theory, which resulted in his placing the separate boxes where they would be easy of access to the bees (and to robbers), was based on incorrect data: he believed that the bees would gladly accept the (to his mind) most convenient receptacles for honey-storing; but they, it would appear, prefer to put it *where they can best defend it, and where it will be most easy of access in the winter*, and consequently his 'Pavilion of Nature,'—for his hive was so named,—lacking the conditions which the bee instincts demand, proved to be a failure; and nadiring is within the same parallels.

Next to the separate system of honey-storing, the moveable-comb hive was the most noteable invention in bee-culture, and a hill-top was thereby gained that gave immense scope for observation and improvement, but unfortunately, in this instance, conveniences (?) for the bees and their owners were studied in preference to bee-instincts, though it is but right to say that until the moveable-comb hive gave facilities for investigation very little was known of those instincts. It was, however, 'a grand step,' and great honour is due to the 'Devonshire Bee-keeper' for the light he shed upon the science. On the principle, however, that it is right to 'prove all things,' and 'hold fast to that which is true,' and to the latter only, we have during the best years of our life studied to eliminate from every branch of apiculture all that is faulty, and during the past ten years, during which hive construction with a view to profitable bee-keeping has been our specialty, we have been led, and have been gently leading, to conclusions that the bees themselves have forced upon us.

Ths longitudinal (Combination) principle of hive construction is not a new thing, though it is comparatively so in this country, and there is nothing in it but what is perfectly consistent with the natural habits of bees. It has been on its trial during the past three years, and is fast gaining ground in public favour, and we have little doubt but that the facilities it offers for manipulation will eventually tend to its general adoption. The question, raised by our correspondent, whether more honey cannot be obtained by the use of large supers instead of sections is one which is not affected by the principles of hive-construction under notice. Supers are made up of sections that they may be separable, each comb being thus easily removeable, and there is no reason why a number of them could not be put together to form 'a super' of equal capacity to any that our correspondent has in mind. The question is, therefore, one of taste and convenience. For commercial purposes, however, our conviction is decidedly in favour of sections in preference to large boxes or glasses. Sections may be set on hives in large or small numbers, to suit the conditions of the time, and may be added to or diminished at will, and bees may often be coaxed to work in six or eight 1-lb. sections when every endeavour to get them into a large receptacle would be futile. The *Journal* is undoubtedly a great lever of progress, and we should be glad if every reader would make up his mind to send us a new *paying* subscriber forthwith.—Ed.]

BEE ASSOCIATION FOR NORFOLK.

At a time when so many counties can boast of possessing their various associations for the advancement of apiculture, is it too much to expect that Norfolk should possess one too? I am not much acquainted, however, with the bee-keepers of this county individually; but surely over such a large area there must be not a few who would gladly aid in starting a society for disseminating correct principles in bee manipulation. I admit there are difficulties in the way. Norfolk is a peculiar county, for by far the greater part of it, I should say, is quite unsuited to the bee; and it is only here and there a district exists in which bee-keeping could be carried on with any chance of success. Now the peculiar nature of the county in this respect—and I believe it is almost *sui generis*—makes it of the utmost importance that a bee society should be formed.

As to the average honey-yielding proclivities of the county I have no means of judging, though I should pronounce this particular district a tolerably good one, the failure of the honey harvest last season being occasioned by the incessant rains rather than from any lack of honey-producing plants. This was the more remarkable as, I believe, Norfolk is the dryest county in England as regards rainfall, being only one foot in the year, while Devonshire and Pembrokeshire, considered the wettest, are about three feet respectively. Throughout the whole months of June and July, I think, there were only about seven days in which there was no rain. Last season then, I presume, was an exceptional one, so let not its rains damp the ardour of those who would otherwise have thrown in their lot with us. I should like to hear, Mr. Editor, what others of your Norfolk correspondents have to say on the matter. I need scarcely add that I shall be happy to do all I can in any way towards starting a bee society in this county: how many more will come forward and do likewise?—ALFD. E. BOOKER HILL, *Pembroke Cottage, Whissonsett, Norfolk.*

[We trust the bee-keepers of Norfolk will at once rally round the standard raised by our reverend correspondent, and form an association worthy of the county. Norfolk contains many earnest in the cause, and united they would exert a mighty influence for good.—ED.]

HIVES FOR CONVENIENCE.

I was glad to see your article in favour of the 'Giotto' hive, as that seems to me most likely to suit the wants of cottagers. They want a hive that will give them very little trouble or attention, and be easy to manage, as well as being cheap. They will not give up the straw skep for any hive that is much in advance of it, as they have a very strong objection to anything new, or anything that requires more attention or skill than they have been accustomed to give. A bar-frame hive, with moveable combs, in their hands would not be so good for the bees as a skep, for they would not take advantage of the power it gives for manipulation, and so the 'Giotto' hive comes in between; and, while giving the bee-keeper some command over the bees, does not require him to make too great an advance all at once. It is besides quite as cheap as the skep even at first cost, not considering that it will wear longer. You do not say what would be the effect of having no upward ventilation. When the blocks are put together the hive is virtually a box with a wooden top,* which would not let out the moisture, as the quilt of a bar-frame hive or the skep does. This kind of hive would also do away with the necessity of driving to get the honey, to which cottagers, at any rate in this part of the country, do not take at all kindly. As an instance, I may mention that I drove the bees for a cottager's wife in the early part of the autumn. As they went up in a very short time, she said it looked very easy. I then drove another weak stock and united them, and they have done well since. As she seemed to think it very simple I was in hopes I had converted her, but a few days after on going to see how the bees were getting on she told me she had taken, *i.e.*, smothered, another hive, as she wanted some more honey; so that it seems my lesson was quite thrown away. It is unfortunate that the driven bees require uniting to another stock, as there is not always a weak stock to unite them to, and it is a pity to disturb strong stocks that would stand the winter by themselves, for the sake of uniting bees to them that they do not want, and of course it is more cruel to leave the driven bees in an empty skep to die of starvation than to smother them. This difficulty is easily got over by transferring to a moveable comb hive, but this requires more skill and attention than most cottagers possess.—W. S. CLARKE, *New Court, Ross, Nov.* 16.

* We have not proposed a hive with a closed top; in all that we have attempted to introduce, the top bar is an inch wide only, so that there would be the same distance between them as there is in other frame hives.—ED.

COMBINATION HIVE.

Do not think me cantankerous, but I really cannot agree with you as to the advantage of uniting in a Combination hive by putting the fresh frames at the back of the hive, and for this reason—while doing so the original inhabitants are sure to be on the stir, and in moving the new frames some bees are sure to rise, and in consequence the new and old bees come into contact, under the circumstances which they are used to interpret into burglary on the part of their neighbours. Fights begin to take place, perhaps only in isolated cases, but these attract the attention of the bystanders who readily join in the fray, which will then probably become general and end in mutual destruction. I note your remark as to this difficulty applying to all hives having legs, and for this reason. I always have my bodies separate from the legs, so as to be able to lift them quietly on to the hive to be united to.—W. B.

WIDTH OF FRAMES AND DISTANCES APART.

I am interested in the question of the width of frames and distance from centre to centre of combs. Though I have long kept bees in skeps yielding more or less honey (often less), my interest in bee-keeping only dates from last South Kensington show in July, 1880. I have read *Bee Journal* since May; Robinson (useless); *Handbook of British Bee Association*; Cook, and a dozen of your leaflets, but do not find any satisfactory reasons given for the rule stated on p. 3 of Leaflet No. 12. At the middle of this page is an obvious error, for the difference between $1\frac{1}{2}$ inch and $1\frac{9}{20}$ is not $\frac{1}{10}$ of an inch as stated, but $\frac{1}{20}$. Now is $\frac{1}{10}$ of an inch the limit of bee deviation as stated here, or $\frac{1}{20}$ as given by the correct calculation? Cook states, p. 136, that he places frames $\frac{1}{4}$ inch apart and so his frames are inch wide, this gives $1\frac{1}{4}$ inch from centre to centre of combs. But he seems to think little of this point, while you appear to attach importance to it, for I find that the little steel gauge I had from you makes frames $1\frac{9}{20}$ of an inch. Are

there any old numbers of the *Journal* which discuss the point? If not perhaps you will refer to it shortly, as others must be interested in the matter besides.—J. A. R., *Canaan Lane, Edinburgh, Sept. 27th*, 1880.

[The distance from centre to centre of frames has been determined by repeated measurements of naturally built working combs, such as one wishes to see formed in the stock box of a hive. The statement in the Leaflet alluded to, *appears* to be an error, but it is more the effect of our clumsy way of putting it than a reality. If three lines are laid down an inch and a half apart, and the centre one be moved a twentieth of an inch nearer to one side, the difference in their distances apart will then be a tenth of an inch, which is what we had in mind when the article was penned. We have not tried the effect of frames in the brood-nest closer than bees naturally build them, because we have found it to be a rule in their domestic economy that where two surfaces of worker combs are opposite, the bees insist on there being space between them for strata of bees to pass back to back over each comb, and where from accident two such combs have been brought nearer than is usual, they gnaw away the cells to give the necessary space. And on the other hand, when by accident two brood combs are put farther apart than they should be in summer, the bees build a thin curtain of comb between them, and the reason is obvious—the brood nest of a hive is a scene of continuous labour while brood is being produced, and the bees want sufficient room to move about on each respective comb and no more; if too much be given, there will be loss of heat, which they will do their best to prevent, and in the interest of the brood will crowd into the vacancy, when, as may easily be imagined, they will be crowded and impeded in their labour. If two men were walking abreast on two planks, say eighteen inches apart, they could move along fairly well, but if a third insisted on going between them, he would have to cling to them or fall between the planks, or a third plank would have to be laid between the others for him to walk upon. The bees soon discover the discomfort of a 'third party' in their house, and to give him foothold they build a thin curtain of wax as before mentioned. It is probable that Professor Cook's '$\frac{1}{4}$' of an inch should be a $\frac{1}{2}$, but he may have a good reason for his statement, which is unexplained. We first forced, or taught (?), the bees to build combs upon wood by giving them sheets of wood covered with wax at the regular distances, and putting other sheets of plain wood between them, and they soon demonstrated that wooden bases were not specially objectionable, and having started, the plain wood was withdrawn, and they were allowed to complete their work.—Ed.]

Review.

British Bee-farming: its Profits and Pleasures.—This book, we regret to say, is miserably disappointing, and calculated to do an immensity of mischief to the cause it is professedly intended to serve. Ill written, far behind the times, absurdly contradictory in its statements, brazen in assertion, bald in its discursiveness, it can only be classed with the wares of the itinerant that were 'made to sell.' There is nothing in the book that is new, and very little that is true that is not overshadowed by contrary assertion; so that it is puzzling instead of being helpful to the beginner in bee-keeping, and practically useless except as a memento of the vanity of inexperience. We have painfully waded through its two hundred and odd pages and cannot find a single excuse for its publication. There is very little indeed in explanation of its title, and only a confused idea can be gathered of the author's meaning. He promises enormous profits as the result of 'bee-farming,' but utterly fails to show how they are achieved. He says:

'To make it [bee-farming] profitable, we must first throw overboard every hive which is too large to be workable, and then invest a few shillings upon the Italian honey extractor' (p. 1); and almost in the next breath he says, the present style of cottagers' management and its failures arise because they 'still use the common straw skep, all made of one shape and size,' and the bad results are said to arise 'from the hives being too small' (p. 3). And again: 'They [small hives] are prolific in one thing—that is swarms' (p. 4). Swarms are here apparently condemned, but presently they are a valuable commodity.

He says: 'Taking swarms into consideration, as part of the profits of the bee-farm, we know of no trade so lucrative as that of a *bee-farmer*' (p. 8). 'Which is best, a swarm that may be sold for 10*s*., or may be worth three times this sum to you, or two or three pounds of honey at most, as the result of supering?' 'Our way never prevents swarming, for the bees, ever active and industrious, go on storing honey day by day' (p. 7).

Large hives are soon, apparently, recommended, for the author says:

'When a stock is taken from a hollow tree, it is not uncommon to secure "an" hundredweight of honey;' and in the next paragraph, 'The old-fashioned small skep must be abolished if success is to be secured' (p. 4). 'Remember your stock will swarm long before your neighbours if you adopt the bee-farmer's hive,—hence your special need of preparation' (p. 21).

Then follows an absurdly contradictory statement, or rather, a series of them:

'The only hive we have found successful is one not more than 12 inches square, internally. This is taught us by the fact that our cottagers' wives who use the old-fashioned skep of about 12 inches square (*sic*), can generally succeed in having a fair honey-harvest when their neighbours, who employ large hives such as the Woodbury, can seldom obtain much honey from them' (p. 6). 'The best hive, all points considered, is the bar-frame hive called the "Woodbury hive." Carr's improved Woodbury is too small, and from this cause alone worthless' (p. 9). 'The "modifications" of the Woodbury hive include such as Carr's, Siebert on the Wold, Major Munns' bar-frame hives, Pettitt's bar-frame, Pettitt's Temple, Lees' Octagon hive, Lees' Woodbury, and others too numerous to mention' (p. 9). 'But a chief point is the size of the hive.' (Here, in a long paragraph, the ordinary-sized Woodbury hive is utterly condemned),—'They are too large,—the bees never fill them: the bees are dispirited,—never swarm, and yield a poor return' (p. 10). Fancy 'Lees' Octagon hive' being a modification of the Woodbury! (The Woodbury hive is recognised, on page 24, as being $14\frac{1}{2}$ inches square.)

On page 19, the inside measurements of the 'Farmers' hive' are given: 'It is made 12 inches long, $11\frac{3}{4}$ wide and 10 inches deep;' but it is to be made with two pieces of board $11\frac{3}{4}$ inches long and 10 inches deep for the front and back, and two pieces of the same dimensions for the sides. The top-board is 16 inches square, and the floor-board $16\frac{1}{2}$ inches square' (p. 19). 'The six boards constituting the hive must be made of inch deal, well seasoned, and they are to be painted in three coats of stone-coloured paint, inside and out' (p. 20); and presently, 'The boards of the bar-hive should, if possible, be *one and a half inch in thickness*' (p. 24).

Our readers will have some difficulty in reconciling these statements, and will scarcely accept them as highly commendatory of the bee-farmer's hive, the dimensions of which are given above, which will contain eight frames, of small size be it remembered. This hive we assume, however, is considered the *sine qua non* to suc-

cess, and all the honey is to be taken by the aid of the Italian extractor, an instrument we would advise everyone to have on trial before purchasing one.

Supering is condemned in unmistakable terms as follows: 'We advise all our readers never to use supers on the hive; let the bees manage their own affairs and send out swarms as often as they like.' 'Placing supers may seem pleasant to a novice, but it deters the bees from swarming' (p. 7). He says: 'The super, whether it be in the form of a bellglass, or a small square wooden box placed on the top of a hive, in nine cases out of ten prevents swarming; thus it is "*penny wise and pound foolish*"' (p. 17). 'Many foolish bee-keepers place an eke at the bottom of the hive to make it larger when the bees show signs of swarming; this results in the loss of the swarm,' &c. (p. 17). 'If you are wise you will never employ either the dreaded super or the eke in your apiary. If nothing else will teach you, the heavy loss and dwindling stocks, year by year, will bring our words to your remembrance when too late' (p. 18).

If people are foolish enough to believe the assertions made in this wretched book, every other cultural industry would soon give place to bee-farming. The author says:

'A poor curate, vicar, or cottager working all day on the neighbouring farm, may add to their present small income 100*l.* annually from bee-farming' (p. 2). 'Our system, if followed honestly, should bring an annual income of ten pounds per hive.' 'In poor seasons it should clear six pounds' (p. 8).

The author, avoiding supering as he would poison, says:

'Our way never prevents swarming, for the bees, ever active and industrious, go on storing honey day by day; the plan then is this:—About twice a-week, in the height of the honey-season, puff a little smoke,' &c., and 'slip out the bar at each end of the hive, cut off the tops or caps over the cells, place it in the *extractor*,—two or three whirls round completely empty it of all the honey; then give it back to the bees, the comb not being in the slightest degree injured, is again filled in three or four days, to be again emptied out. At each operation, not less than *six pounds of pure, limpid honey* come out of the *extractor*. This is worth nine shillings, if sold privately.'

We are not told how long the height of the honey-season is supposed to last, but presuming each hive to yield two swarms of the value (10*s.* each) set down by the author, it ought to continue unintermittingly for fifteen weeks to produce the sum total of 10*l.*, the profit promised in a good season.

There is not, throughout the book, one word on the subject of comb-foundation, sections for honey-storing, and not a single allusion to the work carried on by the *British*, or its kindred Bee-keepers' Associations; and we can only regret that such a book has been put before the public. Time and space prevent further allusion to its absurdities, but we will return to the task in time to prevent, if possible, some of the mistakes that may be made if its dictates are followed; for the present we conclude with, 'How to prepare barley-sugar for feeding.' The author says: 'Put two pounds of loaf-sugar into a saucepan of water, and two spoonfuls of best vinegar; put it on a gentle fire, let it boil for about twenty minutes,' &c. We presume any size of saucepan, or spoon, will do equally well.

Echoes from the Hives.

Trieste, 6th December, 1880.—'We have fine weather here, and my Cyprians have nearly every day a flight during over a fortnight. It is a pity that we cannot enjoy such weather the winter all round.—A. Schröder, jun.'

Weston, Leamington.—'Splendid open weather we have had here lately for bees to fly, and which they appear to have thoroughly enjoyed, after the sharp weather we had three weeks ago.—A Warwickshire Bee-keeper, *Weston, Leamington, Dec.* 15, 1880.'

Deanfoot, N. B., Dec. 18, 1880.—'This has not been a year for much honey here, but rather for increasing stocks, and every bee-keeper has greatly increased them. Last year there were thirty kept here, this year there are seventy. I have not had as many swarms as my neighbours, but had some well-filled sections instead, which I showed at an Industrial Exhibition, and got a good price for; also a frame-hive with sections complete, and an observatory hive with Ligurian bees, which those present took a good deal of interest in. My bees are all in frame-hives, and never were as comfortable as at present. There is more in wintering bees than most bee-keepers are aware of, and I am of opinion that the cause of spring dwindling might be traced to the winter cold. Dysentery will never occur in a hive that has received proper winter care and protection. The hardest frost this winter was thirty-five degrees; snow and frost has again set in eighteen degrees this morning.—Francis Baillie.'

Maidenhead, Dec. 18, 1880.—A Lady Bee-keeper writes: 'My nine stocks of last winter did well with me for an amateur, their numbers increasing by August to twenty-two. I have no difficulty in getting them to make use of supers, either glass, wood, or straw; but they take to large-sized supers much better than small. This neighbourhood chiefly depends upon lime-trees, therefore it was not a good season for us, as, during the three weeks of their being in bloom, there was constant rain. Notwithstanding this, I secured 115 lbs. 7 ozs., of super virgin comb, and of dript 107 lbs. 4 ozs., and 6 lbs. of wax. I have a ready sale for any super-comb I have to spare at 2*s.* and 1*s.* for run-honey, and our chemist buys the wax at 1*s.* 3*d.* per lb. The twenty-two hives were reduced to twelve—four in bar-frames, the rest in large cottage-hives, without any of the bees being destroyed on the 26th of August. This is written to encourage other lady bee-keepers. I have had Martin hitherto to take up my own hives, but I drive those of the cottagers myself. Several say next year they shall be able to do their own now they have seen it done by me. I am very glad you have not to send to me the *Bee Journal* in a "pink wrapper;" I should not like your rap at all; it is shameful.'

Queries and Replies.

Query No. 365.—*Barley-sugar—Bee Trees.*—Will you please tell me why my barley-sugar, after boiling, turns into stuff just like lump-sugar, instead of being clear and hard? Also, are there any trees bees most *prefer* to swarm upon?—Chas. H. Edwards, *The Chalet, Mill Hill, N. Hendon.*

Reply to Query No. 365.—We presume there has not been sufficient acid added to the sugar to effect the necessary change. Bees, as far we have ever seen, have no favourite trees for swarming to; but it is quite certain that where one swarm has clustered another is very likely to come another day; a fact due, more likely, to the odour left about the spot than to any special affection for a particular kind of tree.—Ed.

Query No. 366.—*The Irish Hive.*—I am going to use the wooden comb-foundation in one of your Irish hives to act as a divider, as you suggest, and put sections behind it. Should the slot at the bottom be covered with excluder-zinc, and will it want moving more forward at the end of the season?—R. A. S., *Borobridge.*

Reply to Query No. 366.—It will doubtless render the exclusion of the queen more certain if the zinc be

used, otherwise, the wood being thin, a slot could be cut of the right width, that might answer for excluding purposes. We rather incline to the use of a zinc divider between brood and sections, and the placing of the wooden comb at the back of the sections as shown in figure on page 151. At the end of the season the sections should be removed and the brood-nest enclosed with the 'divider.'—Ed.

Query No. 367.—*Late Drones.*—Will you kindly favour me with an explanation of the following case? Of seven stalls of bees an early swarm of this season shows a very large proportion of drones, probably more than half. They are in a bar-hive full of honey. Of late the whole have been active and the other stalls engaged in feeding on the blossom of the broad-leaved Algerian ivy, a very late variety. To-day the drone stall in question is alone restless, simply buzzing outside and working in and out. Not a bee is moving elsewhere where all was activity yesterday, nor at any time of late have drones been seen, with slight exceptions, at the other stalls.—A Lady, *Arundel, Dec. 7th*, 1880.

Reply to Query No. 367.—We have little doubt but that the stock is queenless from some unexplained cause. Having become so, the bees would have no brood to attend to after about ten days, and would therefore be at liberty to gather honey, which not being required as food for embryo bees, they would store largely, and the hive would in a good season, such as the past, attain great weight. When the time came for slaying the drones, this hive (having no queen) would become a refuge for those of other hives, a fact which will account for the large number now present. The activity at the hive entrance was not of the same character as that of the other hives; they were working and gathering this petulant idleness.—Ed.

Query No. 368.—*Irish Hive.*—1. In your description of the Irish hive, a piece of wood $\frac{3}{8}$ square inch nailed on the top of the sides flush with the inside, this leaves a $\frac{5}{8}$ rabbet on the outside, what is this for, as the frames are made to project over the sides? And should not the frame-bars be reduced $\frac{1}{8}$ instead of $\frac{1}{16}$ at the shoulders? as then it will bring them exactly level with the back and front, the sides having been left $\frac{3}{8}$ lower, and the bar being originally $\frac{1}{2}$ inch thick. I am delighted that you have simplified the bar ends.

2. Am I right in making the frame ends of the same width as the bars, that is, about 1 inch?

3. I shall, I expect, be changing my residence about March to a distance of twelve miles. How and when had I better move my bees? They are in wooden hives, of your Crystal Palace Cottager's and Improved Woodbury type, and one original Woodbury. As there is no one about here who understands bee-keeping, I look to you for all my advice, if not troubling you too much.—R. A. S., *Borobridge.*

Reply to Query No. 368.—1. The object in leaving the rabbet is that there shall not be a broad surface for the frame-ends to rest upon, to lessen the chances of crushing bees. In strictness we ought to have said an eighth as the amount of reduction of the frame-ends, but as the top surface of the bars is usually planed, *practically* a sixteenth is sufficient. It is as well in making the hive to cut the front and back a trifle wider than is described ($8\frac{3}{4}$ inches), and having fitted the frames, to plane them (the front and back) down to a level; but in making many, due regard ought to be paid to exactness. The simplification of the bar-ends has made hive-making and ordinary management much more easy, fully repaying the small additional cost of their production.

2. This is a point on which many of our experts and judges do not agree with us—we would prefer for bee-comfort that the frame-ends should be of the width of the widened shoulders of their top bars, as so often explained in reference to the Giotto principle of hive; but the public have been taught to dread the propolising that would ensue if the junctions of the frame-ends were not perfect, and thus we are compelled to make them as you suggest.

3. We would remove the bees when the weather will give them opportunity for flight after their journey. If it were only a mile or two, and they could be carried by hand, they might be moved at any time with safety, but as they will probably be jolted, and caused to fill themselves with honey, a flight afterwards will be desirable. Their combs should be rendered secure from falling and breaking, and the hive should be thoroughly ventilated at the top, a covering of perforated zinc or cheese-cloth over the frames being the best. Tie the floor-boards securely, and let the bees travel in a light spring cart with plenty of hay or shavings for a cushion.—Ed.

NOTICES TO CORRESPONDENTS & INQUIRERS.

J. Dunlop, *Downpatrick.*—*Excluder zinc.*—Abbott's long-holed excluder is no hindrance to the bees; strips one inch wide will be sufficient for admission to the supers. *Breeds of Bees.*—For industry, hybrids, *i.e.*, the cross between a pure-bred Ligurian queen and an English drone. Beauty, Cyprian bees (these have an excellent character from their last place). Fertility, Ligurian or Cyprian. Suitability to the Irish Climate, Hybrids as described above. The introduction of a few Ligurian queens will soon effect an improvement in the race of bees. *Heather.*—It is the common variety that our bees get their chief supplies from, the 'bottle' heather being available to bees with longer tongues.

Newtown, Rostrevor.—*Nearness of Hives.*—Ordinarily, if placed in groups of two, three, or four, about four feet from hive to hive, and eight from group to group, they will be sufficiently isolated; but distance is not all that is required for safety. There ought to be such a difference in the aspect, *i.e.* in the actual appearance of each hive and group, that bees could not make a mistake, or they will be liable to get mixed up, and difficulties will be sure to arise. At the South Kensington Show, 1880, the hives of bees on exhibition were several feet apart in a straight row, the entrance-ways to them being through holes cut in the sash-frames of the huge arched windows. These windows extended in various directions for hundreds of yards, and there was sufficient similarity to deceive almost any one, and it is not to be wondered at that the bees made serious mistakes. They went into wrong hives and encased the queens, and into some of the arched windows in which there were no entrance-ways, or hives, and settled and clustered in corners similar to their allotted corners, producing terrible confusion, and causing much loss of bee-life, and injury to the stocks. We would, therefore, recommend that as much variety as possible should be exhibited in the appearance of the hives and groups, trees, as permanent landmarks, being taken into account in the selection of sites for them. We strongly recommend that every hive stand alone, either on its own legs, or having none, on a separate stand of its own. Forms or benches are liable to be shaken when hives are being examined, and bees are thereby disturbed when they had better be left quiet.

J. H. V.—*Spring Feeding.*—Full directions for spring feeding will be given in the February No. of *Journal.* If bees need food sooner, *i.e.*, if they are approaching starvation, they should have a little barley-sugar, two or three ounces at a time put into the feeding-hole and covered up with a piece of cloth, flannel, or carpet will do well enough. When the crocuses come into bloom will be the right time to give pea-flour as arti-

ficial pollen. *Removing and Transferring Bees.*—Our leaflet on transferring, post-free 1*d.*, will tell how that is done. The shed may be removed at once, if you have provided hives with individual covers that can be placed on the existing hives; and its removal will so alter the aspect of the place, that the hives may be moved a few yards with safety, forthwith, if desired.

C. T.—*The Quilt.*—In supering, the quilt is entirely removed, and you may use an adapter of wood with $\frac{5}{32}$-inch slits or one of long-holed perforated zinc, as you prefer. Many, however, set the sections down upon the frames, crosswise, trusting to the space between the sections being of correct width (which all are not) for excluding purposes.

Durdanach, Pitlochry. — *Ligurianising and Foul Brood.*—Imported bees as a rule become dysenteric on the journey, and believing that the sporules of that disease generate foul brood, we advise that queens (which do not suffer from it) should be introduced alone on arrival. The practice too often commended of putting the imported box of dysenteric bees and dirty honey over the feeding-hole with zinc between, and allowing the bees of the hive to unite with those in the box, and carry the honey down into their hive is very likely indeed to set up the disease in question.

Closing Entrances.—Notwithstanding the opinions and practices of others, we are much averse to closing the entrances of hives, except for very temporary purposes. Bees will not be tempted out into the snow if the bright sunlight be kept from the entrance. Sunlight in winter attracts bees, and they come forth unwarrantably when there is no snow, and perish of cold; but when snow is on the ground their corpses are more easily seen, hence the snow is charged with being the cause of their venturesomeness, whereas it is really the light.

BEE FLOWERS.

CROCUSES are all gone,—those not sold have been planted,—but we have a few thousands of the new Bee-plant, Limnanthes Douglasii, which will follow Arabis Alpinus in blooming, and is much liked by the Bees.

Price, free on rail, at Southall, 1*s.* 6*d.* per hundred, or 10*s.* 6*d.* per thousand, package included.

Abbott Bros., Southall, Middlesex.

This plant literally throws up 'heaps' of blossoms, and bees come at it in droves. It lasts in bloom a month or more.

ROYAL SOCIETY for the PREVENTION of CRUELTY to ANIMALS.

MONTHLY RETURN of CONVICTIONS (not including those obtained by the Police or by kindred Societies) obtained DURING NOVEMBER, 1880, as follows:—

Horses—Working in an unfit state	167
Horses—Beating, kicking, stabbing, &c. ...	28
Horses—Overdriving and overloading	4
Horses—Starving by withholding food	1
Donkeys—Working in an unfit state	7
Donkeys—Beating, kicking, stabbing, &c. ...	9
Cattle—Beating, kicking, stabbing, &c.	4
Cattle—Overstocking (distending udders) ...	2
Cattle—Cutting for identification	1
Cattle—Improperly killing	2
Sheep—Beating, kicking, stabbing, &c.	3
Pigs—Beating, kicking, stabbing, &c.	1
Dogs—Beating, kicking, stabbing, &c.	7
Dogs—Starving by withholding food	2
Cats—Setting dogs to worry	1
Cats—Cutting tails off	3
Fowls—Beating, kicking, stabbing, &c.	1
Fowls—Overcrowding in baskets	2
Fowls—Allowing to remain in toothed trap ...	1
Geese—Beating, kicking, stabbing, &c.	1
Pigeons—Improperly conveying	4
Hyenas—Burning during menagerie performances	1
Argali—Beating, kicking, stabbing, &c. ...	1
Various—Owners causing above offences ...	70
Total, during November, 1880	323

Twenty-three offenders were committed to prison (full costs paid by the Society), 300 offenders paid pecuniary penalties (penalties are not received by the Society); 50 convictions were obtained in Metropolitan Courts, and 273 in Provincial Courts.

JOHN COLAM, *Secretary.*

105 Jermyn Street, London.

SUBSCRIPTIONS and DONATIONS are URGENTLY NEEDED, the income having been seriously reduced by commercial depression. The public are therefore earnestly solicited to forward remittances, payable to the Secretary, to whom all letters should be addressed

ARABIS ALPINUS, the best early Honey-yielding Flower, blooms from March to July, or all the year round by successive plantings. It has been blooming with us from March to mid-September. Price, 1*s.* 6*d.* per hundred plants; 10*s.* 6*d.* per thousand; very hardy; sure to grow, and increases rapidly. Plant one foot apart every way. Abbott Bros., Southall, Middlesex.

PRICE SIXPENCE.

THE GARDENER.

A MONTHLY MAGAZINE OF HORTICULTURE AND FLORICULTURE.

EDITED BY DAVID THOMSON,

Author of 'Handy Book of the Flower-Garden,' 'Fruit Culture under Glass,' &c.

AIDED BY A STAFF OF PRACTICAL GARDENERS.

The Number for January contains:—

Orchid Culture.—How to make the most of Wall-borders in Kitchen Gardens: No. I.—Roses on their own Roots.—Greenhouse Plants: No. I., The Azalea.—The Fruit Garden: No. I.—Notes on Decorative Greenhouse Plants: Lisianthus Russellianus and L. Princeps.—Notes from the Papers.—Hints for Amateurs.—Peas and their Culture.—Choice New or Rare Hardy Flowers.—The Renovation of an Old Garden.—Botany for Gardeners: No. III., Stems; No. IV., Leaves.—Flower Gardening: Cost of the Two Systems—Among the Chrysanthemums.—Cattleya Labiata at Bothwell Castle.—Storrs Hall.—Dundee Horticultural Association.—Calendar: Forcing Department; Kitchen Garden.

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THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

[No. 95. Vol. VIII.] MARCH, 1881. [Published Monthly.]

Editorial, Notices, &c.

MARCH.

February, though much milder than the month preceding, has not been good for bees; a few warm, sunny days gave the occasion for flight and their owners opportunity for examination, and often unwise manipulation, and—will it be believed? has caused queries to be sent to us on the advisability of making early artificial swarms. Truly 'one swallow does not make a summer,' but one or two fine days appear to be sufficient to turn the heads of anxious bee-keepers. We are writing on the 21st February, and the ground is again covered with snow, and everything looks winterly and miserable, except the crocus blossoms that show their heads like miniature golden sugar-loaves through it. The hard frost of January did little if any harm to bees in well-ordered apiaries; but where their owners have carelessly and thoughtlessly trusted in providence, they have had in the majority of instances to pay the penalty due to improvidence in the form of dampness, dysentery, and death in their hives.

The great press of matter, which has necessitated an increase in the number of our pages this month, warns us that we must use our own pen a little less freely than usual; but we have every faith that the contributions of others will be equally acceptable to our readers.

To economise space, a large number of queries that were evidently intended to appear have been answered through the post, and this must be our apology if such be needed for the proceeding.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

Increasing the Brood Nest.—Under the influence of stimulative feeding in hives in which the bees have been crowded together by the dividing-board, the breeding will go on so rapidly that every available cell will be occupied with eggs and larvæ before there has been time for young bees to come into life, and acting upon impulse amateurs will be apt to enlarge the nest to give further liberty to the queen to deposit more eggs and cause more brood to be created. In this matter we would advise extreme caution. Bees that are well able to maintain life-supporting heat for themselves and the brood (for the brood generates comparatively little and needs the presence of bees) in, say, three frames of comb, may find a difficulty in cold weather in generating sufficient for that of a fourth frame, and its introduction would probably do mischief. We would, therefore, refrain from adding the fourth until the population has begun to increase and the chief of the brood approaches maturity, and then we would place the added empty comb by the side of it *pro tem.* Many writers advise that the comb in question should be placed *between* those containing brood, which advice is sound when the weather is sufficiently mild to preclude danger, but in early days we would prefer that the bees indicate sufficiency of strength to take charge of it (by commencing to breed in it) before we would force its absolute care upon them by giving it a central place. Bee management is like playing a game of draughts or chess—it may be very easy to make a dozen moves, but it is stupidly absurd to move at all without considering what is likely to happen afterwards.

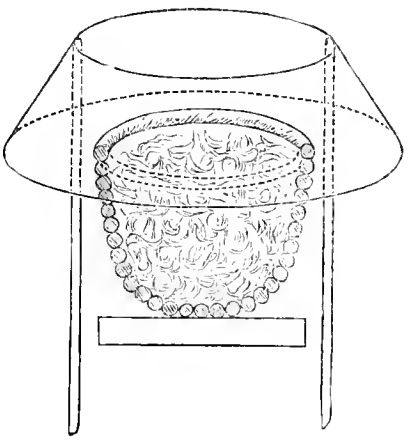
Prevent Robbing.—Weak stocks are liable to attacks from the strong, and when observed the warfare can be stayed simply and certainly by inserting into the entrance of the hive a tube of perforated zinc about a foot long and with room in it for bees to pass freely, all other means of exit or entrance being closed for the time. No robber or other bee will dream of entering by the projecting end, and as they cannot get in at the entrance proper, they will desist from their depredations, when the withdrawal of the tube will give entrance to the lawful inhabitants. This excellent device is the invention of Mr. Tenny Braddy, of Kelvedon, Essex, and is equally good for emptying supers of their bees.

EARLY SPRING TREATMENT.

(*Continued from page* 188.)

True to their nature, the crocuses have put in an appearance, and already over-anxious bee-keepers are delighting in the labour of their bees, as they literally wallow in the artificial pollen offered to them. We do our best to restrain impetuous amateurs, lest, in their desire to stimulate, they should destroy—a slight increase of oil will often make a lamp burn more brightly, but a superabundance will put out the light. Nevertheless, firmly believing in the soundness of our theory of spring stimulation, we commend its practice, always premising that if begun it should be carefully and cautiously continued until the bees are able to gather abundantly from natural sources. Writing from a point nine miles west of London, and governed in great degree by the natural conditions about us, it can scarcely be expected that our experiences and acts will be more than suggestive to others whose surroundings are different; each, therefore, must establish a law for himself, accepting our suggestions as far as they may be agreeable, and tempering them with cautious judgment. On a south border we have arabis growing that has been in blossom, more or less, since April of last year; it was a February plantation of 1880, and the ground is now covered with its pale-green foliage. Prior to the planting of the arabis the border had been studded with crocuses, and now through the velvety verdure of the former the dark-green spikes of the latter have shown themselves in profusion; and by the time these pages are before our readers the border will be a perfect 'Tom Tiddler's ground,' covered with gold and silver, and the bees will make merry over the treat which they will find there, supplemented by a daily dole of the invaluable pea-flour, which, in the first instance, will be spooned into the open crocus-flowers to create an appetite for it and insure its acceptation by them. Our first crocus-bloom opened on the 10th Feb., and during the present month there will be many thousands of them for the bees to revel in, and arabis in profusion; there will also be a number of palm-bearing willows in bloom, yielding both honey and pollen; and then, as the days would scarcely be long enough to enable us to fill the crocus-blossoms, even if it were desirable to do so,* we shall extemporise some 'big sun-flowers,' in which the bees can find a continuous supply until the natural product renders such aid unnecessary.

In preparing this 'sun-flower' we take an old skep, dry-scrub it inside to clear it of dirt, and fill it loosely with yellow deal shavings; it is then set upon a piece of wood or stone, to keep it off the earth, and three or four stakes are driven around it into the ground, and tied close to it with a string; the pea-flour is then sprinkled on the shavings, and the whole roofed in with a milk-pan inverted, as indicated in the wood-cut.



The object sought in thus stimulating bees is the production of brood, and it will be obvious that a supply of pollen alone will not produce that desirable result. Indeed it will often be found that bees will not be eager for the pollen, and it may in such case be inferred that there is not a corresponding incoming of honey, and steps must therefore be taken to produce such income, or its equivalent, artificially. In stocks not well supplied with honey it will only be necessary to supply them with syrup proportionate to their requirements, giving the bees access to two, three, or more pin-holes in the feeding-stage of which mention was made in our former article on the subject. Stocks that have abundance of honey in their hives will not need to be fed artificially, but it will greatly stimulate them while pollen-carrying is possible if some of the honey in their combs be daily unsealed. To do this it will only be necessary to turn up the quilt and slide off a few of the cell-caps near the top, or at the back or sides of the brood-nest, when the bees will seize upon the honey as if it were a newly-found treasure, and its effect upon them will be equally as effective as if they had been fed, and will be more beneficial, because it will tend to empty the cells about the brood-nest, instead of causing them to be over-filled, as would be the case if additional syrup were given to them.

While stimulating bees in the spring with

* It will be well to be cautious in charging the crocus-cups with pea-flour; the crocus naturally only opens itself during sunshine, and while its blossoms form the only out-door attraction to the bees it would be unwise to prevent their closing when the sunshine is withdrawn. When the honey supply is enlarged, and flowers and blossoms become comparatively abundant, the supply of artificial pollen need not be thus limited.—Ed.

the chances of variation of weather that may be dangerous, it will be well to bear in mind that the brood-nest cannot well be kept too close and snug, that there may not be any draught through it, or any possible waste of heat. The bees should only have access to as many combs as they can conveniently cover, and had better be crowded for want of space amongst the combs than be allowed to have vacancies in their brood-chamber, in which the heat can condense. Attention also should be paid to the hive-entrance, that it be not too wide, and at the same time that it be of sufficient width for two bees, at the least, to pass, that there may be no difficulty in a live bee carrying out a dead one. It will be better that the bees should be obliged to ventilate their hive by fanning at the entrance during changeable weather than that they should be suddenly compelled to cluster closely for self-protection from cold, and thus often neglect the brood on the edges of their nest, for deserted brood will be sure to die, and its loss will be of serious consequence, since the bees that produce it will have become worn in the labour of production, and less able to repair the damage and recuperate the loss.

Those who have no crocuses to guide them will know when they are blooming in their neighbourhood, and in early days will be able to tempt the bees to seek for artificial pollen by sprinkling a little on the alighting boards of their hives, and feeding gently with syrup, as already advised, during the hours of sunshine, and when a taste for it has been acquired, offering it, as suggested, at short distances from them. Pea-flour, when fresh, has a strong odour, and bees having tasted it will not be long in finding it; and we would advise that it be placed in warm, sheltered corners where the sun shines in the forenoon.

MANAGING AN APIARY.

(*Continued from page* 189.)

[In the second line of the right-hand column on page 189 a comma that should have come in after the word 'effort,' arranged itself after the word increased: and in the eleventh line from the bottom of the 'article,' if the reader will read frame *of* sections instead of frame *as* sections, the meaning intended will be more readily understood.]

We have, in the former pages referred to, suggested that out of the supposed apiary of ten stocks five should be increased to great strength for honey-gathering from the first crop, at more or less cost to the remaining five which would have charge of all the combs containing eggs and young larvæ. The first harvest is from fruit, and whitethorn blossoms in May and June; and ere June is ended the five stocks on hand ought, aided by the bottle, to be in condition to work upon the limes and white clover, which may be accounted the second harvest; or, at any rate, there ought to be sufficient bees and brood to make up three strong honey-gathering stocks, though with the care and attention prescribed they should all be able to do 'something' when the harvest is at its height.

We will, however, be satisfied to have eight now at work in the sections, and it will be well to keep watch over them that they may not by accumulating honey in the stock-hive, unduly interfere with the production of brood in the somewhat limited brood-chamber, which, be it remembered, consists of eight frames only An occasional examination of the brood-nest will afford most valuable information on this point, and its desirability, which the best authorities are agreed upon, is a strong argument in favour of hives which give facilities for such manipulation, and suggests a reason for placing the sections or frames to receive the comb-honey *round about* instead of *above* the brood-nest. In these examinations, if combs be found surcharged with honey, it will be wise to remove them and extract it, exchanging them for full combs from the two stocks 'on hand,' which in turn will be much encouraged if their honey be extracted, and fed back to them, for it is a continuous incoming of that article, or its equivalent, and not the quantity that they accumulate, that most surely promotes the production of brood and keeps up the population. Feeding them with syrup will, of course, answer the purpose of stimulation; but as it might become mixed with honey in the combs we cannot advise such feeding if the over-abundance is to be retained when extracted. It will be a wonderful advantage to have on hand a supply of extracted honey during the harvest seasons so that when the bees cannot get out to gather it (for wet days will come, though they be not wanted by the bee-keeper), they may be fed and kept in good heart.

There will, of course, be the usual chances of swarming interfering with the honey-storing by populous hives, but during the examinations that should from week to week take place, the presence of queen-cells will, as a rule, indicate the tendency, and enable the bee-keeper to take timely precaution; but the method of treatment proper, under the circumstances, deserves to be noticed under a new heading.

Prevention of Swarming from Supered Hives.—By supered hives are meant all such as have been provided with separate honey receptacles, whether for the reception of virgin comb, or for honey for extraction, and few of our readers will fail to acknowledge that the issue of swarms from such as are prosperously gathering, is most vexatious and disappointing. The examinations, of which we have written

in the foregoing, will have made the bee-keeper aware of the intention of the bees in that respect, and it would be easy to take precautions to prevent it; but we are inclined to think that when honey is coming in largely, it would be wise to render swarming impossible for some time, and stop the labour and cost of brood-raising by removing the queen at once.

It is well known that a honey-glut seldom lasts more than a fortnight in this country, and that bees consume honey largely in the production of brood during that time, and we opine that it would pay better to stop such expenditure of honey, and set the bees engaged in the labour of the nursery free to gather honey for storing, and to afterwards stimulate the production of brood in the lulls between the harvests by feeding them with sugar-syrup, which is so much less valuable.

We would therefore counsel the removal of the queen when the honey-harvest begins, and one week afterwards we would cut out all the queen-cells save one, which may be allowed to hatch out, and the young queen take her chance of safety: honey is the object, everything else missed can be repaired, but the harvest having passed cannot be reclaimed. Those who prefer not to dethrone the queens at the commencement of the harvest, and who would rather follow the old course must be on the alert if the bees show signs of their intention to swarm by raising queen-cells. A great many believe that by cutting them out they will effectually do away with the desire for swarming, but that is an error, for the desire is raised beforehand, and is sometimes so much like mania that swarms will issue without warning or preparation of any kind, and occasionally with the only princess that has been allowed to hatch, leaving the hive to perish through sheer lack of means to provide a successor. This last possibility must always be risked with hives that swarm, nevertheless, to prevent the issuing of a swarm, as far as it is possible to do so when supers are being filled, we would advise the removal of the queen at the first appearance of queen-cells and the cutting out of all the latter but one, and to prevent the object being defeated, would go through a similar process of excision after the lapse of three or four days, for it is most probable that on missing their queen the bees will raise a fresh batch of royal cradles.

In view of the fatality above alluded to it is always advisable to examine stocks after they have swarmed, and not to relax in vigilance until they have laying queens.

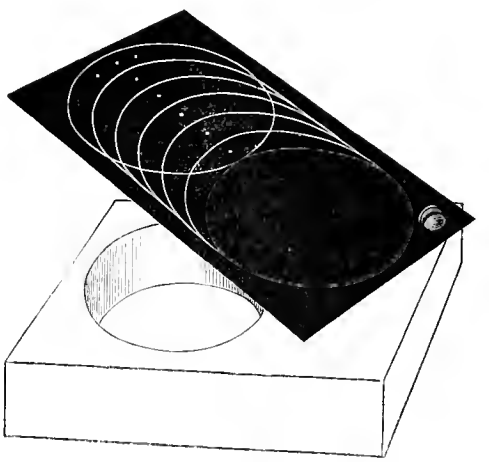
How to deal with the extracted honey and with the dethroned queens will be subjects of future remarks, want of space preventing their appearance in the present Number of *Journal*.

FEEDERS.

Since the acceptation of our theory of slow continuous regulated feeding for stimulating the production of brood in spring and autumn, and at other times when paucity of natural supplies of food renders breeding uncertain, the inventive genius of bee-keepers has been greatly exercised in the production of means by which the feeding of bees may be performed in a cleanly, easy, and reliable way.

It is not necessary now to discuss the principle involved in the theory in question, or to enumerate the inventions that have tended to the object desired, viz. a continuous supply of syrup easily regulated to the requirements of the bees, and constantly accessible to them, yet so disposed that it cannot drip into the hive, and cannot be attacked from the outside.

After years of experimenting, with many failures, and considerable expenditure of money, time, and ingenuity, the public have given their verdict in favour of the Vale of York feeding-stage for utter simplicity and cheapness, and, we are fain to believe, Abbott's speciality feeder for perfection. The former is the invention of a Reverend Vicar in Yorkshire, and consists of a block of wood about half an inch in thickness, with a hole through it of about two inches in diameter, and having upon



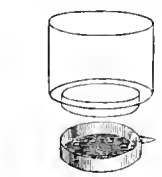
it a plate of zinc or vulcanite perforated, as shown in the woodcut, and upon this, when properly arranged over the feeding-hole, a bottle of syrup is inverted in the usual way. It will be seen that an ordinary bottle can stand clear of all the holes in the top plate, in which case the bees would not be able to get at any of the food, but by sliding the bottle over the holes opportunity is offered for them to take it, and by giving it over more or less of them, the rate of feeding can be regulated.

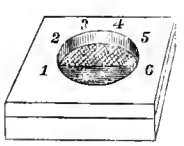
An easy way of inverting the bottle with safety is of consequence, and if the mouth be

first covered with writing-paper, which can be afterwards pulled away, the object will be effected. There are other well-known means of inversion, by tin-shovel and spatula; but our object is to show the simplest and least costly.

When using this apparatus it will be necessary to cover it to prevent bees getting at the syrup round the outer edge of the bottle—a pan, basin, or meat-tin will do for temporary use; but it is always best to have a sound, well-ventilated roof and super-case, that access by the bees may be impossible, and that evaporation from the hive may not be hindered.

Abbott's speciality feeder consists of a squatty bottle which fits into a tin cap, the latter being pierced with sundry holes round one half of its flat face, and when fitted on the bottle of syrup it is put into the wooden socket prepared for it, and is complete.





The wooden socket is formed of two thicknesses of perforated wood, and between them are placed half a sheet of plain and half a sheet of perforated zinc or vulcanite. Now it will be evident that if the bottle and cap be so placed that the holes in the latter are over the plain half sheet, the bees can get no syrup; but by turning it to the right or left the holes will be brought over the perforations in the socket, and the bees will be supplied, and the indicator on the cap will point to the figure on the surface of the socket, and show the number of holes to which the bees have access.

The bottle can be removed for filling, and replaced without danger of bees flying or syrup being spilled, and the socket can be used for barley-sugar feeding when required, and in neither case need there be mess or dirt, and at any time the supply of food may be cut off altogether.

ARABIS ALPINUS.

If a further opinion on the value of this plant for bees be desired, we quote that of Wm. Carr, Esq., of Newton Heath, Manchester. He says, p. 196, *B. B. J.*, vol. iii., Feb., 1876, 'This is one of the most useful bee plants we have, as it flowers early in spring from March to May, and yields quantities of pollen and honey. When in full bloom you can scarcely see a leaf for the number of white flowers, and in a morning I have seen the flowers so covered with bees that you could scarcely see a flower from the great number of bees working on them.'

FRAME-HIVE MANAGEMENT.

We are permitted to announce the forthcoming of a work on the above subject at the hands of a bee-master, whose vast experience, ability, and uniform success, are sufficient guarantee that it will fully supply the missing link in the literature and science of bee culture. The bee-world is groaning under the load of rubbish *written to sell*, or to sell the wares of the writers; but here will be a book written in the interest of bee-culture to instruct bee-keepers in the various ways of managing their bees in frame-hives, without regard to shape, make, material, or maker; and in the interest of bee-keepers we anticipate for it a hearty welcome.

We have not seen a line of the manuscript, but have been favoured with a list of the subjects to be dealt with, and with that before us and our knowledge of the writer we have every confidence that the work will be a valuable one. It will be issued in cheap form at the lowest possible price, to bring it within the means of all the students in the modern school of apiculture, and without doubt it will, in better guise, find a place in every library as a standard of reference.

BRITISH BEE-KEEPERS' ASSOCIATION.

The Committee meeting of the Association was held at the National Chamber of Trade, 446 Strand, on Wednesday, February 16th, when there were present—Mr. T. W. Cowan, Rev. E. Bartrum, Mr. F. Cheshire, Dr. Lionel S. Beale, Mr. J. M. Hooker, Mr. H. Jonas, Rev. G. Raynor, Mr. E. S. Whealler, and Rev. H. R. Peel (Hon. Sec.) Mr. T. W. Cowan was voted to the chair.

It was resolved that the arrangement made in previous years for the election of chairman at each committee-meeting should be adopted during the ensuing year. The minutes of the last committee-meeting having been read and confirmed, the Secretary reported that he had received a letter from the Hon. and Rev. C. Feilding (the Hon. Secretary of the Shropshire Association), calling attention to the fact that by the resolution passed at the last committee-meeting respecting the awarding of medals at county shows, cottagers, although residing in the county, if not members of the County Associations, would be ineligible to compete for these medals.

Proposed by the Chairman, and seconded by Mr. Cheshire:—'That the resolution passed at the last committee-metting be amended and read as follows:—"The silver and bronze medals and certificates offered for competition at the annual shows of affiliated Societies be open for competition only to members and *bonâ fide* cottagers residing within the boundaries of the county."'

Mr. Whealler reported that an International Horticultural Show was to be held at Manchester on August 24—27.

The Secretary promised to communicate with the Secretary of the show (Mr. Bruce Findlay, Royal Botanic Gardens, Manchester), for the purpose of having the Bee-tent erected in the show-ground.

The committee were of opinion that it was desirable to make special arrangements with Agricultural Societies, and the Secretary was requested to make such arrangements as he considered advisable.

The Annual General Meeting of the members of this Association was held at 446 Strand, on Wednesday, February 16th. In the absence of the President of the Association (the Baroness Burdett-Coutts), Mr. T. W. Cowan was voted to the chair. There was a large at-

tendance, including—Bishop Tozer, Rev. E. Bartrum, Rev. G. Raynor, Rev. H. J. Wilcox, Dr. Lionel S. Beale, Mr. Cheshire, Mr. Camaschella, Mr. Glennie (Treasurer), Mr. Allen, Mr. Jonas, Mr. Whealler, Mr. H. C. Finch, Mr. H. G. Morris, Mr. Hooker, Mr. Lyon, Mr. Littleboy, Mr. Roberts, Mr. Stewart, Mr. F. R. Jackson, Mr. Lemare, Mr. Scott, Mr. Neighbour, Mr. Fielder, Mr. Tomlin, &c. There were also present—Mr. Jesse Garratt, representative of the West Kent Association; and Mr. Cartland, representative of the Berks and Bucks Association.

The minutes of the last general meeting having been read and confirmed, the Chairman, having briefly reviewed the progress the Association had made during the past year, moved:—'That the report of the committee and balance-sheet issued for the year 1880 be received and adopted, with a vote of thanks to Mr. Kirchner, the auditor.'

Mr. Lyon seconded the motion, and called attention to a resolution having been passed at the last annual meeting, that all amounts received for subscriptions of life-memberships should be treated as capital and invested. From the report issued it was shown that the committee had not been able to carry out this resolution.

The Secretary explained that the mode of carrying out this resolution had been left to the committee, and they had decided that the amounts already received should be invested in accordance with the terms of the resolution as soon as the balance in the hands of the Treasurer had reached 100*l*.

Mr. J. E. Littleboy moved a vote of thanks to the retiring officers for their services during the past year.

Bishop Tozer seconded the motion, which was carried.

Mr. Cheshire moved a vote of thanks to the Council of the Royal Society for the Prevention of Cruelty to Animals for the gratuitous use of their Board-room for committee-meetings.

The Rev. G. Raynor seconded the motion, which was carried.

The Rev. E. Bartrum moved the re-election of the Baroness Burdett-Coutts as President, the Presidents or Heads of County Associations as Vice-presidents, Mr. W. O'B. Glennie as Treasurer, and the Rev. H. R. Peel as Hon. Secretary, for the ensuing year.

Mr. H. Jonas seconded the motion. This was carried, and the Hon. Secretary returned thanks on behalf of himself and his colleagues for their re-election.

The Hon. Secretary then read the result of the voting for the election of the committee for 1881 as follows:—Mr. T. W. Cowan, 195 votes; Rev. G. Raynor, 188; Mr. F. Cheshire, 181; Rev. E. Bartrum, 180; Mr. J. M. Hooker, 175; Dr. Lionel S. Beale, 172; Mr. C. N. Abbott, 143; Mr. E. S. Whealler, 98; Mr. H. Jonas, 96; Rev. F. T. Scott, 82; Mr. D. Stewart, 69; Mr. G. H. Morris, 47; Rev. H. W. Benn, 39; Mr. W. W. Kittlewell, 26. The first nine gentlemen constitute the committee. A vote of thanks was given to Mr. Willard for his services as scrutineer.

Engagements for 1881.

The Hon. Secretary next stated the arrangements which had been made for coming shows up to that time. Their old friends, the Royal Horticultural Society, as soon as the last year's show was concluded, made an engagement with the Association for July 26th and six following days. Last year more than 11,000 persons visited the Annual Show at the Horticultural Society's Gardens on Bank Holiday, a large proportion of them not overlooking the Bee Tent. He was glad to say the Royal Agricultural Society fully held out the right hand of fellowship to this Association, and seemed now to consider it one of the features of their Show, which this year would be held at Derby, commencing on the 13th of July, a Wednesday, and continuing till the following Monday. A letter was read from the Secretary of the Derby Show, stating that the committee had resolved upon the usual conditions, viz. that the Society should pay the Association 20*l*. towards its expenses, in addition to finding shedding, the Association to take the entrance-fees of this department of the exhibition. This communication should have been laid before the committee on the 18th of January, but in consequence of the very heavy fall of snow, the Secretary said no meeting had been held; and as an early reply was requested he had written guaranteeing on behalf of the Association a certain amount of money in prizes; and this he felt justified in doing, as the expense to Derby would not be so great as it was to Carlisle last year. With regard to the Oxfordshire Society, a special invitation had been given for the Bee Tent to be sent to their show at Thame, on May 25th and 26th, the secretary of the Society suggesting that there would be some grounds for hoping that a county branch of the Association might result from the exhibition. This year there was to be a Dairy Farmers' Exhibition held at Birmingham, on the same lines as that held at Islington in November, and the Association had been asked to send their Bee Tent there, the arrangements being the same as those made with the Royal Agricultural Society. It had been suggested to him that the Association would meet with a good reception if they were to apply to be represented at the Bath and West of England Show to be held this year at Tunbridge Wells. He had received a letter from a gentleman in Dublin who had taken upon himself in these unsettled and troublous times the somewhat difficult task of forming an Irish Bee-keepers' Association. This was one of the results of the visit of the Association's Bee Tent to Ireland last year. The writer said he had many difficulties to encounter, and at times felt inclined to give up the idea, and probably would have done this but for the exhortations and friendly advice received from this side of the Channel. He had been reminded that there would be a great International Flower Show held at Manchester in August, at which this Association should be represented, and with a view to this object he proposed to put himself immediately in communication with the Secretary.

Alteration of Rules.

Mr. E. S. Whealler moved an amendment to Rule 6, viz., that the word 'May' be altered to 'January,' and the words '30th day of April' to '31st day of December.

Mr. Cheshire seconded, and a discussion ensued, in which several gentlemen expressed an objection to the alteration; other members supported the resolution, and finally the motion was carried with the addition of a rider to the effect that for the present year those who did not agree with the change should be entitled to receive a 'drawback' from their subscriptions equal to one-third of the year.

The Honorary Secretary then moved an amendment to Rule 8, viz., 'to omit the words "a copy of the balance-sheet, the auditor's report of the preceding year," and to add the word "auditor" after "treasurer."' His object, he said, was to bring the rule in accordance with their practice, because it was impossible for them to carry out the rule by sending out the balance-sheet at the same time as the voting papers.

Mr. Glennie seconded the motion, and it was carried unanimously.

Mr. Kirchner was reappointed auditor to the Association for the ensuing year.

The Rev. E. Bartrum moved an additional rule as follows: 'The Managing Committee shall publish an annual report, balance-sheet, and list of members, together with the amounts of their subscriptions, which the secretary shall cause to be sent to each member, together with an agenda of the business to be transacted at the general meeting, at least six days prior to the date of such meeting.' This rule, he said, had been framed with the view of making their rules correspond with their practice. They had been in the habit of sending out

reports of the Association, but no rule was at present laid down with respect to that.

The Rev. G. Raynor seconded the motion, which was carried.

The date of the first committee meeting was fixed for the 9th March, when the Prize Schedules for the year 1881 will form the principal business.

The Rev. T. Sisson, speaking of the contents of the schedules for exhibitions, said it had occurred to him that the interest of amateur bee-keepers would be largely increased in some of the exhibitions, if in addition to the classes open to professionals and cottagers, there could be an intermediate class of such as were not professionals, or for such, as himself, who might not be considered a cottager. He had felt that he should like to go into competitions in a small way. He had also thought a prize might be offered for the best hive made by an amateur, not an artisan.

Mr. Cheshire said his experience of their shows pointed out that the professional bee-keeper was usually conspicuous by his failure in competing with those who were not professional bee-keepers. When he spoke of professional bee-keepers he meant those who derived income from the manufacture of hives and bee appliances, and who kept bees for profit only; those were the people who he thought were immensely in the background.

The subject dropped, and

Mr. Littleboy moved, and the Rev. E. Bartrum seconded, a vote of thanks to the chairman, which was carried by acclamation.

Mr. Cowan, in response, said he was sorry to have been obliged to take the chair, for he would much rather that the President had been there: however, he hoped at the next meeting they would have the pleasure of her ladyship's personal presence.

The meeting then terminated, and the members having partaken of tea and coffee, they re-assembled to hear a paper from Mr. Lyon on 'Cheap Bar-frame Hives for Cottagers' Use.' At this gathering the chair was occupied by Bishop Tozer, who introduced Mr. Lyon to the meeting.

Cheap Bar-frame Hives for Cottagers' Use.

The second rule of this Association reads thus:—'Its objects shall be the encouragement, improvement, and advancement of bee-culture in the United Kingdom, particularly as a means of bettering the condition of cottagers and the agricultural labouring classes, as well as the advocacy of humanity to that industrious labourer—the Honey Bee.'

As long as the straw skep remains the hive mostly in use, so long will these objects remain far from accomplishment. We must therefore seek by every means in our power to thrust it on one side by the introduction of the moveable-comb system.

We have by the prizes offered at the various shows succeeded in a wonderful manner in so stimulating the ingenuity of, and competition among hive-manufacturers, that it seems almost impossible that a useful hive can be made and sold for less than the prices now quoted. I have here a list emanating from a hive-manufacturer in Scotland commencing at 5*s.* for a complete hive containing eight frames, Woodbury size, with roof. He writes me that he will pay carriage on twelve hives to any part of England or Scotland.

If, however, we inquire of hive-makers who are their principal customers, we shall find that with very few exceptions they are clergymen, gentlemen of means, well-to-do tradesmen, and others, who can well afford an outlay of a few shillings for each hive, leaving the great mass of bee-owners in possession of the straw-skep and its accompanying brimstone-pit. To these the great impediment to the adoption of any improved system is the comparative expense, although, as I have just said, it seems next to impossible to reduce the cost of a ready-made hive below present prices. I am in the habit each autumn of driving round through Surrey on a bee-life-saving expedition, calling upon upwards of thirty bee-owners to drive their bees for them instead of allowing them to 'put them down.' I find, and I think all of you who are in the habit of doing the same will confirm me, that although here and there one comes upon a school-master or mistress, or a gamekeeper or head-gardener, the great majority of these cottagers are agricultural labourers earning but a few shillings weekly, and having just a few stands of bees.

We will suppose one of these poor folks has been persuaded to visit a bee-show held in the neighbourhood. He enters the tent, and sees the bees driven and transferred to a bar-frame hive: he sees the extractor used, he sees sections exhibited filled with virgin comb and glasses of run honey clear and transparent, very different to his own 'muddle-puddle' production. He has various makes of hives shown him, and finds the cheapest of them costs many shillings, and that many miles from him, so that carriage has to be added. However, he makes up his mind to hive at least one swarm 'next year' in a bar-frame hive; but alas! this good resolution is formed in the early autumn, the winter has to be passed through, work is scarce, and when the spring arrives he finds many calls upon his purse far more urgent than the, to him, speculative investment in an improved bee-hive; so when his swarms come forth they are just hived in the old skeps, and stood upon the old stands. Another year passes on the old system, and his good intention adds another paving-stone to a nameless place.

I therefore purpose devoting the time which you have placed at my disposal to-night to endeavouring to help our friend to a bar-frame hive which will be serviceable, and shall not cost him more than his favourite straw-skep.

The moveable-comb system may be divided into two branches, viz. the Italian or leaf, and the bar-frame. The former, from its requiring frames only, without body-box, would be the cheapest if we could trust our friend with it, but knowing his clumsy way of doing things as illustrated by his neat arrangements in cabbage-leaves and old sacks on and about his skeps, he would, I am afraid, if he got hold of a set of leaf-frames, omit to place them close together or mismanage them in some way, and get disgusted with the new-fangled way. I shall therefore confine myself to the bar-frame hive.

If we consider the component parts of a bar-frame hive, stripped of ornamental and, if I may term them so, luxurious accessories, added for the convenience, not of the bees, but of the bee-keepers, we find it to consist of a box, with a loose bottom having a projection for an alighting-board, a hole for the bees to enter by, the frames, dummy or division-board, some woven material to lay over the frames, and a roof.

If we buy our hive ready made we must pay for—1st, the wood; 2nd, the labour; 3rd, the vendor's profit; 4th, the carriage from the place of manufacture. These items make up a total which, as I have shown, places it beyond the reach of our friend. We must therefore seek some cheaper way of going to work; and the only way to compete in price with the straw-skep is to show the cottager how he can make his own hives. And here we must carefully guard against giving him such a pattern and directions as will require more tools than he is likely to be possessed of. Amateur carpenters with a good assortment of joiners' tools are rather apt to forget how much they have cost, and how many expensive tools are employed in so simple an operation as making a plain box. The tools a labourer is likely to have are a saw (not a tenon-saw, but most likely a handsaw or half-rip), a hammer, a rule, a knife, and a pair of pincers, or if he has not them he can very likely borrow them of a neighbour; and he is most likely to be car-

penter enough to put up a pig-sty or mend a gate; and no more skill is required to make a hive.

As we cannot with the means and tools at our disposal make our boxes we must look about for some which have already served the purpose for which they were made, and can therefore be sold for less than the cost of making. The very essence of the bar-frame system is the complete interchangeability of the frames.

Every frame in every hive in one apiary should be interchangeable with every other frame. It is therefore necessary in the selection of our boxes that they should be always without difficulty obtainable of uniform size and shape.

In looking about for suitable boxes, I have tried wine-cases, brandy-cases, and milk-cases, all of which are too shallow. Milk-cases, however, make very good super-covers or roofs. The cases in which preserved meat is imported are very good and strong, but, unfortunately, each packer uses a slightly different shape, so that if we make our frames to fit one of, say, Wilson's cases, and the next we buy happens to have been obtained by the grocer from, say, M'Neil, it will be found that the frames do not fit.

The only boxes I have found to be always uniform are lobster-boxes, *i.e.*, boxes in which preserved lobster in tins has been imported (preserved salmon-cases are not so good, although of the same size, the wood is very thin and rough).

The lobster boxes are 18½ in. long, 12¼ wide, and 9 in. deep (inside measure), well made of good wood, planed outside, 1 in. thick at the end and full ½ in. at the sides; they have a lid and a bottom, and cost 3*d.*, or sometimes 4*d.* each.

Of all the various shapes and sizes of hives which have been introduced, the Woodbury, having ten frames, each 13½ in. by 8¼ inside measure, giving 1147½ superficial inches of comb when filled, has been found the most suitable for general use. The lobster-box will contain twelve frames, each 11¼ by 8½ inside measure, which give exactly 1147½ super inches of comb, the same as the Woodbury. Comparing the size another way I turn to our *Handbook*, p. 21, (second edition), and find a hive containing 2000 cubic in., mentioned as a desirable size, the lobster-box contains 2039 cubic inches.

There is another advantage which is not to be overlooked, viz., that the frames being only 11¼ inches, inside measure, will be filled from side to side by any comb from an average-sized skep (except the outside ones, which, as they are nearly always store-comb, are seldom transferred) without piecing. We all know how important it is in transferring to squeeze the combs into the frames to fit tightly, and what care it requires to fit two pieces into one frame. I think that we cannot do better than adopt the lobster-box for our body-box.

I have here a hive or body box made from one of these boxes. The alighting-board is made out of a piece of the lid, and so is the batten across the bottom. The strips at the ends are from waste in cutting the frames. I have purposely left it rough as from the saw. Had I used a plane of course I should have made a neat job of it; but my object is to show how our friend can work with such tools as I mentioned above, with the addition presently to be named.

We now come to the frames. Whatever hive we take, whether the cheapest or the most expensive, these must have certain characteristics in common. They must be of such an outside size as to leave ⅛ in. space between them and the inside of the hive, and between the bottom rail (if any) and the floorboard. They must have some means of preserving these spaces without danger of becoming displaced, they must be 1⅜ in. bare (1 ⅜ths) from centre to centre, and must have some means of preserving this distance. The former spaces (the ⅛ in. between the frames and the hive sides) are generally preserved by means of the top bars being rebated so as to catch on the inside of the hive. The rebates offer great scope for propolisation. The distance from centre to centre of the frames is sometimes kept by driving nails called distance-tacks into the edges of the top bars. This is a very inconvenient plan. In my early bee-keeping days I used these tacks or staples; but very soon abandoned them for wide shoulders.

Last summer I was asked by a friend to examine a very spiteful lot of hybrids, which another friend had essayed to examine and had got rather punished. They were in a hive with distance tacks, and when after some difficulty I had wrenched off the crownboard (there was no quilt); I fairly laughed as the scene of my predecessor and the hybrids rose up before me. The frames had been just dropped in anyhow, some of the tacks had lodged on the top of the adjoining frames, in other places wide gaps had been left. It was clear that he had been in too great a hurry to escape, to be bothered with the tacks and things. Now, with wide-shouldered frames, if the bees get spiteful, one need only drop them into the hive, throw the quilt over, and leave the whole until the bees are settled down, when by pushing the outside frames along until they will go no farther they all slide along into their places without further trouble or danger of being out of place. The frames with these tacks also require a fillet outside the ends to keep in the heat and also the bees, preventing our handling the ends of the frames. I therefore propose that our frames shall be wide-shouldered.

As we cannot afford to pay for labour we must show our friend how to make his frames with little trouble, and with tolerable certainty that he cannot go wrong. We now require a tool which is not likely to be found in his possession, viz., a 'cutting-guage,' cost 10*d.*, and a brad-awl, cost 2*d.* I have here a piece of best pine-wood, it is 'five-cut,' *i.e.*, five cuts, giving six boards out of a plank 3 in. by 11. A plank costs in London 4*s.* and each cut 3*d.*, making 5*s.* 3*d.* for 72 ft., or say 1*d.* per foot of five-cut board; perhaps it may cost a little more in the country, but not, I should suppose, more than 1½*d.* per foot.

Being unwilling to turn this room into a carpenter's shop, I have cut it off to the proper length—viz. the width of the body box outside. I lay it on the hive, and with a pencil-mark along both sides, thus:—, placing my hand inside the box and marking the under side along the sides of the box, and then mark off ¼ in. inside this line on each end. I now set my guage to 1⅜ in. bare, and cut off slips from my pine, thus:—[Here Mr. L. showed practically how, by drawing the knife of the guage a few times along the wood, the piece was cut off the exact width required.] There is a reason for using best pine, viz. it is free from knots and crooked grain, which would throw out the guage. I now with my knife cut a notch at each end, ¼ in. deep, at the mark made as described above, and set my guage to ¼ in. I cut out the two pieces between the notches, thus leaving the ends of the full width to form a shoulder, and our top bar is made. [The top bar now appeared as a piece of wood, 1 in. bare wide, having at each end a ¼ in. shoulder on each side.]

I now take another piece of pine, already cut off, ½ in. less than the depth of the box—being ⅛ for the bottom rail and ⅜ for the clearance necessary—and setting my guage to the width of the top bar in the middle, where the two ¼-in. pieces have been removed, I cut off strips to form the side pieces. The pieces which came out of the top bar will form the bottom rail. Before nailing together, however, we must provide for the preservation of the ⅛-in. space. This I do by making a hole with my bradawl diagonally outwards from the marks (which show the width of the inside of the hive) through the top bar, and, when nailed together, driving a French nail through the hole into each of the side pieces.

Here is a frame completed. You will observe that

there is very little scope for propolisation, as there is no step or rebate on the under side, and no part of the shoulder projects inside the wall of the hive.

The frames now require waxing along the centre; this is a very simple operation. A strip of wet wood is held by the thumb, so as to leave half the underside of the top bar uncovered, and a spoonful of melted wax poured along.

The quilt or covering for the frames may be any old material—a few darns and patches will not affect its usefulness: and for additional warmth in winter a bag of chaff, or of bruised and dried ferns, will do. I have bought at a rag-shop a lot of old carpet, at 1*d.* per lb., which answered capitally.

The division-board is made of part of one of the lids. The roof is formed of another lobster-box, with fillets cut from the lid nailed round, to keep out the weather. It may be made waterproof by the plan recommended in our *Handbook*, viz. pitching and covering with paper.

The hive is now complete, with the exception of the supers. As to these, I think it best not to attempt too much at first. Let us get bar-frame hives adopted, if we can. Let us show the cottager how he can obtain a bar-frame hive at less than the cost of his favourite skep; and when the long time it lasts is considered, it will be far cheaper, and he will be willing to adopt it. You notice that I place the door at one end, and the frames across the hive, so that the greater part of the honey will be stored at the back, with a fair chance of its being uncontaminated by brood, and with the certainty of its being taken without destroying the bees—a vast step in advance.

As to the position of the frames across the hive, I may mention that the day after the recent snow-storm I lifted off the roofs, and in each hive I found from a handful to a quart-measure of snow-dust in the 'ante-chamber.' I pack my bees at the back of the hive, with the division-board in front of the frames, so that there is an empty space, or ante-chamber, between it and the entrance. Had the frames run the other way this snow would have been blown in between the combs, causing a great deal of damp when the thaw came.

[Mr. Raynor mentioned that he had found his side-combs completely filled with snow-dust.]

I will now reckon the cost:—We have two boxes at 3*d.*, or say 4*d.* each—8*d.*; one 5-cut board (pine) costs 1*s.*, but it makes frames for two hives—6*d.*; nails, pitch, and paper, not more than 4*d.*; total, 1*s.* 6*d.* Then the cutting-guage will cost 10*d.*, but that is plant. I reckon nothing for materials for quilt, as any old clothes which would be burnt or thrown away will do; nor do I reckon anything for the stand, as this must be provided for a skep (indeed, a skep requires a floor-board, and our 1*s.* 6*d.* hive has one). Four stakes driven into the ground make a fair stand. This small sum of 1*s.* 6*d.* need not be expended all at once: one week a box may be bought, another the board, another another box, as he can spare a few pence.

Of course the mere reading of this paper before you will not help us in the objects which I started by quoting: but, if the result of the discussion which I hope will now follow, should be that the plan I propose is likely to be of service, perhaps some steps may be taken to bring the contents of my paper into the hands of those intended to be thereby benefited. The means which I would suggest would be that County Associations should distribute pattern-frames to fit these boxes, with printed directions for making, so that these can be made during the long winter evenings ready for the ensuing spring. Another might be, that sets of machine-cut frames might be on sale by the shops in the villages, where at present straw skeps are sold. A set of frames could be sold for 1*s.* 6*d.*

[The discussion on the preceding interesting paper we propose to give *in extenso* in our next issue.]

The Annual Report.

In presenting their Report and Balance-sheet for the year 1880, the Committee are glad to announce that the number of members is steadily increasing. There are now upwards of 250 subscribers, as against 215 at the close of 1879. Since the date of the last Annual General Meeting, held on Wednesday, February 18, 1880, under the presidency of the Baroness Burdett-Coutts, much has been done towards extending the work and carrying out the aims of the Association.

(1) 'By assisting in the formation of County Bee-keepers' Associations in affiliation with the Central Society.' Four new County Associations have been established during the past year, viz., Berks and Bucks, Essex, Suffolk, and Warwickshire. The Committee also look forward with confidence to the establishment of County Bee-keepers' Associations in Cambridgeshire, Lancashire, Oxfordshire, Wiltshire, and Norfolk.

It is to be regretted that no communication has been received during the past year from the Nottinghamshire County Association, formed in 1879, and that the Affiliation Fee has been suffered to lapse. It is hoped that the bee-keepers and others interested in the promotion of bee-culture in the County of Nottingham will exert every effort to revive their County Association, and establish it on a firm basis. The attendance of the Bee Tent, accompanied by Mr. Abbott and Mr. Carr, at several Agricultural and Horticultural Shows in Ireland during the months of August and September last, has resulted in steps being taken towards the formation of a Bee-keepers' Association for Ireland. County Shows of Bees, Hives, and Honey, have been held in the several counties, and the prizes offered by the British Bee-keepers' Association for the production of honey have been awarded as follows, viz.:—

Berks and Bucks Association: Silver medal, Mr. Leonard Harris, Bradenham; bronze medal, Mr. W. Carter, Maidenhead; certificate, Mr. W. Carter, Maidenhead. Dorsetshire Association: Silver medal, Mr. W. H. Dunman, Dorchester; bronze medal, Mr. J. Antell, Puddletown; certificate, Mr. T. Strickland, Puddletown. Devonshire: Silver medal, Mr. W. N. Griffin, Alphington, Exeter; bronze medal, Mr. G. M. Walsh, Exeter; certificate, Mr. W. N. Griffin, Alphington, Exeter. Essex: No County Show held. Herefordshire: Silver medal, Mr. S. Thorne, Ashwell, Baldock; bronze medal, Mr. E. Bacon, Ashwell, Baldock; certificate, Mr. F. M. Smith, Great Hadham. West Kent: Silver medal, Mr. G. Allen, Orpington; bronze medal, Mr. P. Skinner, Swanley; certificate, Mr. R. Scott, Blindley Heath, Godstone. Lincolnshire: Silver medal, Mr. H. Tuck, Upwell, near Wisbeach; bronze medal, Rev. J. L. Lisson, North Walsham; certificate, Miss Gayton, Much Hadham, Herts. Shropshire: Silver medal, Mr. H. Powell, Hampton, Bridgenorth; bronze medal, Mr. P. Fowler, Lilleshall; certificate, Mr. P. Fowler, Lilleshall. Suffolk: Silver medal, Rev. R. A. White, Ipswich; bronze medal, Messrs. Neighbour and Son, Regent Street; certificate, Mr. A. Dix, Ipswich. Surrey: Silver medal, Mr. R. Scott, Godstone; bronze medal, Mr. W. Marriott, Woodside Green; certificate, Mr. W. Marriott, Woodside Green. Warwickshire: No awards.

The Committee take this opportunity to remind Secretaries of County Associations that, in accordance with a resolution passed at a Committee Meeting held on Wednesday, December 8th, the medals and certificates offered by the British Bee-keepers' Association can only be awarded for the production of honey, and the silver medal at least for honey in the comb; the competition for these prizes being limited to Members of the County Association residing within the boundaries of the County.

(2) 'By the attendance of the Association's experts with their Bee Exhibition Tents at Agricultural and Horticultural Shows in all parts of the United Kingdom.'

The aim of the Association to spread a greater knowledge of improved methods of bee-culture by means of exhibitions of bee-driving, transferring, &c. at Local Horticultural and Cottage Garden Shows, has been greatly extended during the past year. Two tents were constantly employed during the season, and the Committee were obliged to provide a temporary tent in order that the Irish tour might be carried out. The following places have been visited during 1880:—Clonmel, Maryborough, Parsonstown, Newry, and Newtownards, in Ireland; Peterborough and Long Buckby, in Northamptonshire; West Wycombe and Launton, in Bucks; Sandy, in Beds; Ipswich, Woodbridge, and Bucklesham, in Suffolk; Manningtree, Great Dunmow, and Chelmsford, in Essex; Farningham, Chislehurst, Bexley Heath, Southboro, Frant, and Sevenoaks, in Kent; Isleworth, Middlesex; Liphook and Haslemere, in Hants; Eastbourne, in Sussex. The Bee Tent was also erected at the Annual Show of the Royal Agricultural Society at Carlisle, where many thousands of persons witnessed the various exhibitions which took place during the four days of the Show. Bee Tents have been purchased during the past year by the Warwickshire, Suffolk, and Hertfordshire County Associations. The Committees of each of these Associations make the requisite arrangements for the attendance of their Tent at Flower and Cottage Garden Shows which take place within their respective Counties.

(3) 'By lectures, meetings, and the circulation of suitable books.' During the past year a course of five Lectures and Addresses on 'Bees and Bee-keeping' have been delivered by Mr. Frank R. Cheshire, in the Council Room of the Royal Horticultural Society. Mr. Cheshire also delivered two lectures, by request of the Committee of Council on Education, to Agricultural Students, at the Science and Art Department, South Kensington.

Four Quarterly Meetings have been held, at each of which papers bearing upon the improved methods of bee-keeping have been read by members of the Association, viz.—(1) On Wednesday, January 14th, at 446 Strand; subject for discussion: 'The Ligurian Queen Bee—Her introduction to Alien Stocks—and the best means of Pure Propagation;' by the Rev. George Raynor, of Hazeleigh Rectory, Maldon, Essex. (2) On Wednesday, April 14th, at 446 Strand; subject for discussion: 'The future of British Bee-Keeping, from a Commercial Point of View; and how the Working Classes can be most successfully aided, and taught the Truths and Advantages of Modern Bee Culture.' By the late Mr. John Hunter. (3) On Tuesday, July 27th, at the Royal Horticultural Gardens, South Kensington; subject for discussion: 'The Relation of Bees to Flowering Plants.' By Mr. Frank R. Cheshire, A.C.P., F.S.A. (4) On Wednesday, October 27th, at 446 Strand; subject for discussion: 'The Stewarton Hive.' By the Rev. E. Bartrum, M.A., Head Master of King Edward Sixth's School, Great Berkhampstead.

A copy of each paper read, and a report of the subsequent discussion, has been forwarded to each member of the Association.

In accordance with the announcement given in the last Annual Report, the Association has issued a valuable set of diagrams, illustrating bee life and culture. These diagrams have been approved by the Science and Art Department at South Kensington, and have been recommended by the Educational Department for use in science schools and classes. Also, an illustrated hand-book for cottagers, entitled 'Modern Bee-Keeping;' containing full and clear instructions for the making of hives, the harvesting of honey, and for the management of bees, both in summer and winter. These works are published for the Association by Messrs. Longman, Green, and Co., Paternoster Row, London, and may be obtained through any bookseller. A full list of the works published by the Association will be found at the commencement of this report.

At the last general meeting, a resolution was passed to the effect that it was desirable to form a reference library of works relating to bee-culture, to which members of the Association might have access. A fund was opened for this purpose through the kindness of the Baroness Burdett-Coutts and Major-General Saunders; and a large donation of books was made by Mr. J. P. Jackson. The Society for the Prevention of Cruelty to Animals has very kindly given space in their book-shelves, standing in their Board Room, for the Bee-keepers' Library, and any member may now have access to the same upon production of his ticket of membership at 105 Jermyn Street.

Communications have been received during the past year from the Science and Art Department, South Kensington, suggesting that two collections of the best hives and appliances used in bee-keeping, should be formed at the Museum at South Kensington, and at the branch Museum at Bethnal Green. These collections are now in course of formation.

At the commencement of 1880, the Committee made arrangements with several well-known fruiterers and grocers for the sale of honey produced by members of the Association; and appointed Mr. S. J. Baldwin to make the necessary arrangements for establishing a Honey Market in the Metropolis. Mr. Baldwin reports as follows:—

'*British Bee-Keepers' Association.* The Rev. H. R. Peel, Hon. Secretary.

'Sir,—I beg to report, for the information of the Committee, that we still have a "Honey Market" without honey.

'After the good results obtained by many of the members of the British Bee-Keepers' Association, and also by the Members of the Affiliated Associations, during the past season, I venture to hope that the existing state of affairs is matter for congratulation rather than to be deplored, as it proves pretty conclusively that, however great the production of pure honey—put up in an attractive and saleable form—there is no difficulty in finding a ready sale at remunerative prices.

'Only one member of the Associations has applied to me for assistance in disposing of his honey, for whom I sold about 50 lbs. (privately).

'I have been applied to by a great many persons, not members, to assist them in finding customers, but have always explained that I only acted as agent for the sale of members' honey.

'I am, Sir, your obedient servant, S. J. Baldwin, Expert, *The Apiary, Stanley Road, Bromley, Kent, 1st January*, 1881.'

The Annual Show of the Association was held in the Gardens of the Royal Horticultural Society at South Kensington, on July 27th, 28th, 29th, 30th, 31st, and Monday, August 2nd (Bank Holiday). The number of entries made in the classes for honey, and the quantity exhibited, was large and of excellent quality; many sales were transacted, and good prices realised. Both comb and extracted honey were shown in a more portable and attractive form for sale than at any previous show. A very large number of persons visited the show on Bank Holiday, more than 10,000 persons having paid for admission to the Gardens. Upwards of 500 visited the Bee Tent during the afternoon. Several members of the Committee attended throughout the show, and explained the use of the various articles exhibited. The prizes were distributed on the third day of the show in the large conservatory, by the Lady Aberdare, who kindly undertook the office in the absence of the Baroness Burdett-Coutts, the President of the Association.

The Committee regret a falling off of donations to the Prize Fund; the small amount, as shown in the balance-sheet, does not compare favourably with the amount subscribed to this fund in previous years, and they would urge a more liberal response to the Prize Fund.

The Association made its appearance at the annual show of the British Dairy Farmers' Association, held in the Agricultural Hall, Islington, on Tuesday, October 25th, and following days. Prizes were offered for hives in three classes; for honey in the comb, in four classes; for extracted honey in glass jars, in two classes; for wax, in one class. A very large number of entries was made in the honey classes, three tons of honey being displayed on the stalls. The show was visited by several thousands of persons, and much interest was shown in this department.

The Association has, during the past year, lost one of its earliest and most energetic members, by the death of Mr. John Hunter. As a member of the Acting Committee, Mr. Hunter was most assiduous in his duties, and most earnest in his desire to promote the cause of a more humane and profitable system of bee-keeping. All who knew him will deeply regret that his life was not so far prolonged as to allow him to witness the full results of his labours on behalf of the cottagers of England.

In conclusion, the Committee have only to add, that the Annual Show of 1881 has been fixed to take place at the Royal Horticultural Gardens, South Kensington, on July 26th and following days, and that H.R.H. the Princess Christian has, at the request of the Baroness Burdett-Coutts, consented to present the prizes to the successful competitors.

BRITISH BEE-KEEPERS' ASSOCIATION.

The Bee Tent in 1881.

The work of the Association in spreading a knowledge of bee-culture by the means of the attendance of its Bee Tents at County Shows, promises to be even larger than during the two preceding years. Arrangements have already been made for their attendance at the Annual Show of the Royal Agricultural Society at Derby, the Annual Show of the Oxfordshire Agricultural Society at Thame; and arrangements are in course of progress for the Bath and West of England Agricultural Show at Tunbridge Wells, the East Riding of Yorkshire Horticultural Show, and the Birmingham Dairy Show. The following dates have already been decided upon:—

May 25 & 26.—Oxfordshire Agricultural Show at Thame.

July 13–18.—Royal Agricultural Show at Derby.

July 26–August 1.—Annual Show B. B. K. A., South Kensington.

August 30.—Horticultural Show at Long Buckby.

ESSEX BEE-KEEPERS' ASSOCIATION.

A meeting of the Essex Bee-keepers' Association was held at Chelmsford, on February 10th, for the purpose of electing vice-presidents of the Society, a committee and secretary for the present year, and for other business.

The following gentlemen were elected Vice-Presidents:—The Lord Bishop of St. Albans, G. Courtauld, Esq., M.P., J.P.; Lieut.-Colonel Lockwood, J.P.; J. W. Perry-Watlington, Esq., D.L., J.P.; Rev. G. Raynor; Rev. C. F. Norman, J.P.; Rev. F. Thackery, M.A.; J. O. Parker, Esq., D.L., J.P.; J. R. Vaisey, Esq., D.L., J.P.; G. P. May, Esq., M.D., J.P.

The Revs. G. Raynor, H. F. Johnson, W. F. Lumley; Messrs. G. D. Clapham, F. Chancellor, R. W. Christy, F. H. Meggy, R. G. Pills, H. S. Coleman, E. Durrant, and W. Debnam, were elected to serve on the committee. G. H. Aubrey was re-elected Hon. Secretary.

The Secretary was instructed to make inquiries as to a Bee Tent, which the Committee considered necessary for the Society to possess.

A CONTRIBUTION TO THE PHYSIOLOGY OF THE BEE. By Dr. Dönhoff.

(*Continued from p.* 195.)

From of old it has been an object of the greatest curiosity to learn what forces lie at the foundation of instinctive actions. There are two views on the subject.—First view. Cuvier and Joh. Müller conclude that inborn ideas lie at the foundation of instinctive actions; they hover like dreams before animals.—Second view. Instinctive actions are automatic movements without idea.

I am not acquainted with a clearer statement of both views. I believe, that if ideas are assumed, two kinds of ideas must be distinguished,—1. The idea which lies at the foundation of the action. —2. The idea of the purpose of the action. The young queen that gnaws off the cover of her cell may have the idea, I will gnaw off the cover; but she may, along with that, have the idea, I will gnaw off the cover in order that I may be able to leave the cell. These ideas of purpose appear to me to be absolutely wanting. The reasons for this conclusion are as follows: 1. A stock, which is placed on a strange stand, makes, at its first outward flight, bearing-noting movements. The bee turns round immediately before the entrance, flies with its head turned towards the entrance, hovering several times backwards and forwards, then it describes spiral movements of continually widening dimensions, until finally it flies straight away, or returns back into the hive: without this instinct it would not find its hive again. A stock which has swarmed makes the same movements; in the wild condition it would come into another district, and, therefore, the bearing-noting movements would be necessary. But if the swarm is caught and placed in the position of the mother stock, it makes the same bearing-noting movements, although the bee, on coming out of the entrance, sees that it is the same well-known district in which it finds itself. It follows, from this, that when it makes the bearing-noting movements it has not the purpose of finding its bearings. If you hold out your leg to a chained watch-dog he bites at your leg, but if a stick is held out to him he bites angrily at the stick. I conclude from that he has no purpose in his biting, —for what purpose could biting a stick have? The broody hen does not cluck when she sits, but as soon as she leads her chickens about she clucks continually.

Fowls live in their wild condition, by preference, in low brushwood, and if the old bird did not continually cluck, the young ones would soon have lost her. Does she now cluck with the purpose that the young ones should not lose her? I do not believe that this purpose is before her, for most hens cluck already when they leave the nest for a short time to seek food in the brooding-time. Some years ago I had the opportunity of making the following remarkable observation:—One of my hens sat for for some days and then forsook the nest and ceased to sit; but from that time it performed all the actions that relate to the care of the brood. It clucked continually when it walked. If it found a worm it lifted it up repeatedly in an enticing way, and only after it had done that for some time would

it eat it up: if it found a piece of bread it crumbled it to pieces; if I approached it would come at me angrily with extended wings. At night, it did not go any longer into the room with the other hens, but sat with extended wings on the ground as if it would keep its brood warm. I shut it up for some time by itself, but it continued to behave in the same way. The impulse to pass its nights on the ground was the first to pass off, as is usual with hens that have brood, the remainder passed away after about three months, therefore, in about the time when hens that have chickens lose their maternal instincts. It was just the same with this hen as with a piece of clockwork—the alarum had gone off too early. The animal had certainly no purpose in these useless actions.

Man, also, does not have any purpose in his instinctive acts: he does not eat in order to live, but he eats because an impulse prompts him. The sucking child does not suck because it thinks of getting milk. The movements of sucking are often retained for a number of years in the form of sucking the thumb; but who in sucking the thumb is thinking about milk? If the bee does not have the idea of purpose it has perhaps the idea,—I will bite off the cover.

In opposition to this the following considerations are presented:—if a bee has its head cut off, lying on its back, it will work with its feet until it stands on its legs again. If the headless bee is lying on its back and a little stick is held out to it, it clasps the stick firmly with its legs when it touches it accidentally with its movements, and now all movements cease. If it is standing on its legs it brushes itself and rubs its hind legs together. If the abdomen is cut off and pressed, the sting is put out and withdrawn as quickly as is seen in an uninjured bee when it is pressed.

A leech, with its head cut off, crept, when put on the table, at every step attaching itself firmly with its sucker; put into water it made undulatory movements and swam like an uninjured leech; sometimes it paused, and after some time began again to swim of itself, or when I touched it. If the tail end was cut off the sucker attached itself firmly to the table when I placed it on the table. Who will now believe that the abdomen of a bee, or the tail-end of a leech, are capable of harbouring ideas? The queen, when she lays an egg in a worker-cell, compresses the spermatheca. The man may believe it who will, that she thinks,—I will compress my spermatheca, or transform a male egg into a female—I don't believe it. The bee has never seen its own abdominal rings, never seen a scale of wax between them, since its eyes can only see forwards. Is it by a kind of intuition to know that it has abdominal rings, that it has a scale of wax between them? Is it to think in building,—I will pull out a scale of wax? The bee has never seen her hind-leg—never seen her corbicula. Is it by a kind of mesmerism to know that it is forming a pellet of pollen in its corbicula by its movements? In the village of Eversael, near Orsoy, there is living a child of five years old in whom there is nothing physical to be discovered except that it has sucked, and is glad when it looks at the sun. It is the highest degree of imbecility—not an acquired idea dwells in its head. It is to me difficult to believe that this child had the inborn idea,—I will suck, and that this impelled it to suck. It follows, as it appears to me, from the observations mentioned, that the queen-bee when she gnaws off the cover from her cell, does not think at all, that they are movements induced by the will, of the nature of which we know nothing further.

Along with ideas and acts of instinct, there occur with the bees sensual and mental emotions. The pleasant feeling of warmth, and the pleasant feeling which the satisfaction of hunger affords, belong to the sensual. First among the mental emotions is the feeling of love. The bees love their queen, they lick her; and since this has no special purpose, it is very probably an expression of emotion. But of what emotion? The act of licking is, with animals, an expression of love: mammals lick their young. The dog that sees his master again after a long time, jumps up at him and passionately licks his face. The feeling which the dog has towards his master is certainly akin to the feeling of human love. This is inferred from the following:—A man likes to be near the man he loves; a dog can hardly leave his master. A man is glad when he sees again the object beloved; the dog is glad when he sees his master again. Man and dog are in sorrow when they are distant from the object beloved. A man is glad when the man he loves is friendly-minded towards him. A dog wags his tail when his master is friendly-minded towards him, when he speaks to him kindly and strokes him. If strangers do this he is indifferent. A man allows himself to be punished by the one whom he loves. A dog bites a stranger who beats him, but allows himself to be pleased with everything done by his master, which is the highest expression of the unselfish mental emotion of love, which conquers hatred. There are the same statics of emotion with dogs and men. The licking of the dog is doubtless an expression of love analogous to our kissing. Why should the licking of bees, who remain so willingly near the queen, be anything else?

Secondly, the emotion of hatred.

The dog hates as thoroughly as only a man can hate, from which, by the way, follows that he also loves. If he has been irritated, sometimes he will not forget this for years. Two farm-house dogs I had made my deadly enemies by threatening them sometimes with my stick. I made the experiment whether I could not reconcile them, and brought with me every day for eight days a pound of meat for them; but it did not succeed. A dog barks and bites only in the neighbourhood of its home, which it defends thereby, without being itself conscious of its purpose: far from its home it is timid and quiet. That the anger of the watch-dog is nearly related to the anger of man is seen in this, that the dramatic movements of the face resemble one another. If the bee is not hurt it only stings in the neighbourhood of its hive. When it stings and is at the same time much excited, the wings are vibrated, so that a peculiar distinct tone is produced. Since the vibration of the wings serves no

purpose, it is manifestly a dramatic expression—an expression of passion. What passion should that be if not the passion of anger?

Thirdly, the emotion of joy.

The peculiar movement (German *sterzen**) made by the bees when they stand, as it were, on tiptoe, vibrating the wings and elevating the tail, is an expression of joy: it occurs only on joyful occasions, as after an abundant in-gathering, or when they are fed. When the hive is taken away from its stand, and after some time replaced, the bees coming from the fields, and that have long been seeking in vain for their hive, fly to it and express their joy in this way. The vivacity of the movement depends on the degree of joy; if they have lost their hive for a longer time the joy of recovery is greater, the movement more vivacious. When a swarm has had its queen taken from it the bees run about in the greatest disquiet; when it is restored to them there breaks out a mighty sterz-hum, like a shout of joy. Also in the case of joy we have the same statics of passion, using a phrase of Spinoza's, as with men. If after a day of abundant in-gathering, amid the uproarious hum, all the bees of the adjoining hives peacefully run about near one another, one may well say, 'Oh, joy! beautiful spark of the Divine, where thy soft wings abide, all men become brothers, all bees become sisters!' In sorrow, for example, at the loss of their queen, their emotion expresses itself by another species of this movement. Among animals it is the dog and the bee that have the most magnanimous nature, and it is this, along with their wonderful instincts, which inspire in us such a passionate love for our bees.

(*To be continued.*)

MODERN BEE-KEEPING. A Handbook for Cottagers. —This excellent little work has been enlarged to eighty pages, and revised; and of it it should be sufficient to say that it has passed the ordeal of the Committee of the British Bee-keepers' Association, and is issued with their approval. There is no better introduction to bee-keeping extant; and the fact that it has already reached its eighth thousand is proof of its appreciation by the public. Its price, 6*d.*, or post-free from this office for 7*d.*, places it within the reach of all, and the heads of villages should insist on its possession by every cottager, for it opens the way to enlarged income and increased enjoyment. It is published for the trade by Longman, Green, & Co., Paternoster Row, and may be had through all booksellers.

THE BEE-KEEPERS' ALMANAC. By Captain Piers Edgcumbe Martin.—Containing prognostications of the weather, and what to do in bee management, is now extant in enlarged form, and in addition to the usual matter there are cash account pages for honey, hives, bees, and bee food bought and sold, a poultry, milk and butter, hatching, and swarming record. The worthy Captain promised that the past month should be 'a variable month, mild, wintry, and stormy,' and that the present will be 'a stormy month,' commencing with 'strong easterly winds and blustery weather,' followed on the 6th, or thereabouts, with 'variable strong winds, very cold;' but April is to be 'a seasonable spring month,' to be followed by a showery but fine May, and 'a very seasonable' June. The receipts for bee food are, however, rather ambiguous. The cash accounts, consisting of over forty ruled pages, are worth the cost of the whole, which is 7*d.*, post free, from King Somborne, Hampshire.

* Can any one give me an English word that expresses this movement?—TRANSLATOR.

Correspondence.

*** *These columns are open to subscribers, so that their queries, replies, correspondence, and experiences may be* fully and faithfully *recorded: and for the discussion of all theories and systems in Bee-culture, and of the relative merits of all hives and appurtenances, that the truth regarding them may be ascertained. The Editor, therefore, must not be expected to coincide with all the views expressed by the various writers. All Correspondence is addressed to the Editor.*

BRITISH BEE-KEEPERS' ASSOCIATION LIBRARY.

Referring to the article headed the 'Association Library,' in the *B. B. J.* for December 1880, a list of the works on bee-culture in possession of the Association is given. Among the several American publications listed, I fail to find the one I prize above all others. I allude to *Quinby's New Bee-keeping*, a work of more than ordinary value to the apiarist. I can account only for its absence on the ground that no individual possessing but one copy would feel like disposing of it. Allow me, therefore, through you, to present to the Association a copy of the work, trusting those who may enjoy a perusal of its pages will find it, as I have done, a most valuable auxiliary to successful bee-keeping. —JOHN Y. DETWILR, *Toledo, Ohio, U.S.A.*

[The book came duly to hand, and has been forwarded to its intended destination. It certainly deserves all that the good-natured donor has said of it.—ED.]

BEE-KEEPING IN THE TROPICS.

Can any of your correspondents give me any information as to whether one is able to keep bees in the tropics and with what success? I am thinking of trying to domesticate some of the wild bees out here, but before going to any expense I wish to get some information on the subject. I had some little experience before I left England, and having been much interested by the busy bee I should much like to try them out here. Within the last month I have seen several swarms, most of which I could have taken, one on the trunk of a tree about three feet above my head; they are said to be very savage, and I fancy great care would have to be taken at first; if you can inform me of the best way to go about it I shall be much obliged, and I will also give you an account of my attempts in that line.—H. B. R., *Balingoda, Ceylon, Nov.* 30, 1880.

HIVE ADVANCEMENT.

Years ago I attempted out of my own cranium to evolve a frame-hive for my bees, and look back with pleasure to that first rude attempt, and am inclined to fall back upon it as a pattern in several points; and as our worthy Editor solicits ideas on hives I tender my first experience. I had eight good straw skeps; and as I held what my bee-keeping friends termed hare-brained notions of bee-keeping, I had often to stand the lash of ridicule. By-and-by I obtained a new book by the late John Hunter, and found there an endorsement of

several of my 'wild ideas,' and I determined to attempt driving, and to make a frame-hive. Not having mastered Mr. Hunter's description further than that the frames lifted out, I set to work and made a box of 1½ in. by 11 in. boards, 2 ft. long, and about 12 in. wide, and frames with tops and ends 1½ in. wide, and 1½ in. bottom rail, virtually making a 1½ in. frame except the bottom rail.

The extreme end frames were exceptions, having only ½ in. wide top rail, thus when the frames were put in the box they made an inside lining of three-eighths wood close at the top and ends, except in respect of the two end frames. I next drove my bees, cut out the combs, and stocked this frame-hive with empty comb, and the bees from two of the skeps.

A novelty about this hive was that, to facilitate lifting the frames, I had left their ends two inches above their top rails, nailing the latter between them. I had never seen a frame-hive; and there were so many ideas in Mr. Hunter's book that I failed to get his ideas on frames into practical shape. Into this 2-inch space about the top rail I placed an ordinary tin pan about 1¼ in. deep. In this I put some syrup, and covered the whole with two or three old sacks, the passage at the two end frames being open; and thus having fed them per Mr. Hunter's instructions, and covered them with a large box, I left them to winter. That winter was most severe. My other driven bees were in skeps destitute of comb, but had been well supplied with syrup, out of which they made combs 6 in. deep; but cold weather prevented building, and the bees in each skep were very weak. To confine myself to the frame-hive, however; in spring I gave them more syrup, and found great pleasure in watching, as soon as ever the syrup was poured into the dripping-pan, the bees streamed up the two open frames like a regiment of soldiers, not one attempting to fly, but all on sweets intent. This fact came into my mind on reading Dr. Dönhoff's article in February *Bee Journal*, where he says bees will not come to their owner's whistle like other pets; if these did not come exactly to call, it was very like it, for both warm and cold syrup was used many times with the same result. They were fed until May, when they ceased to take the syrup, finding honey in the fields. This hive swarmed twice naturally, and in the following September I took about two stone of combs and honey from it, while I had not an ounce from the straw skeps. I found, when about to take the honey, that all the frames were cemented together, and lifted bodily out like a box. A knife easily separated them, and they were easily replaced. Now the point of utility in this hive doubtless was the closed frame ends not allowing any heat to escape. The closed tops can be done away with, and a good quilt will give the same result.

I next found there was a *Bee Journal* published, and of course I got it, and plenty of new ideas. I bought a Standard hive as a pattern, and since then have used it. But there has been a growing conviction that the open frame-ends were wrong, and when in the *Journal* closed ends were advocated, experience during a severe winter and very moderate summer strengthened my conviction, and I am altering my hives to 15 in. square with wide frame ends.

I have been very successful with the 8-bar Abbott Standard; but when I got up to 12, 14, and 16 bars, I found great difficulty in getting them full of bees; all their energy seemed to be spent in raising brood. I find great pleasure in recalling the advance in knowledge displayed in the various volumes of the *B. B. Journal* regarding practical apiculture. A few years ago comb-foundation, excluder-zinc, and various other matters, were dreams, but now they are realities. Next season I hope to succeed in controlling fertilization; at the worst the attempts will be interesting, and I am sanguine of success.

The growing interest in bee-culture will some day, I hope, so increase the pages of the *Journal* as to enable it to appear fortnightly, or even weekly, and that the hope of a professorship will animate all bee-keepers to more harmonious combined action. As a suggestion, I think if a Contents Bill was issued, with large type, many of the readers of the *Bee Journal* could find the means of hanging it in some public place, thus aiding its circulation, and a more general intercourse amongst bee-keepers; many persons are ignorant of such a medium for information. Another idea might be made practical, viz. for the addresses of any bee-keepers who had a wish to visit other apiaries to appear in the *Journal*. For my own part, when in others' vicinity, with half-an-hour to spare, I would be glad to visit and exchange ideas with any brother bee-keeper, and would be extremely glad to return the former at home. The meeting of congenial minds makes people grow less bigoted, and no one knows so much but what he has a great deal to learn.—W. Crisp, *Chester-le-Street, Feb.* 14, 1881.

OBSERVATORY HIVES.

It is stated by most writers that Maraldi,* of Nice, in 1712, invented glass, or observatory bee-hives. I possess a little work printed in 1688, entitled *A Disquisition about the Final Causes of Natural Things, &c.* By the Honourable Robert Boyle, Fellow of the Royal Society.'† From that book I give the accompanying extract, which I think may interest many of your readers.—J. Lawson Sisson.

'Divers Strange Things are deliver'd, not only by Poets, but by more Credible Writers, about the wonderful

* M. Figuier, in *Les Insectes*, says:—'All the fables, all the hypotheses, spread about and cherished by the ancients respecting these industrious little insects, were dissipated in a moment when, by the invention of glass bee-hives, first made in the beginning of last century by Maraldi, a mathematician of Nice, we were enabled to observe their operations and habits. Thanks to the invention of Maraldi, &c.'

† *A Disquisition about the Final Causes of Natural Things;* wherein it is inquired whether, and (if at all) with what Cautions a Naturalist should admit them. By T. H. R. B., Fellow of the Royal Society. To which are Subjoyn'd, by way of Appendix, some Uncommon Observations about Vitiated Sight. By the same Author. London: Printed by H. C. for John Taylor, at the Ship in St. Paul's Church-Yard, 1688.

Sagacity and Government of Bees, in point not only of Oeconomy, but of Politicks too. But tho' I shall not build any thing upon the Authorities that I my self Suspect, yet, having had the Curiosity to keep for a good while in my Closet a Transparent Hive, whence there was a free passage into a neighbouring Garden; and having thereby had the opportunity to make frequent Observations of the Actions of these little Animals, and particularly to see them at work about making their Combs, and filling them with Honey; I confess I discover'd some things that I did not believe before, and was induc'd to look upon them as very fit Instances of Creatures endow'd with Natural Instincts and Providence. For 'twere hard for a Mathematician, in contriving so many Cells, as they make in the Area of one of their Combs, to husband so little space more Skilfully, than They are wont to do. And not only They Carefully and Seasonably lay up their Honey, to serve them all the Winter, but Curiously close up the particular Cells with Covers of Wax, that keep the included Liquor from Spilling, and from External injuries. I do not here mention the Prognostication of Weathers, that may be made in the morning by Their keeping within their Hives, or flying early abroad to furnish themselves with Wax or Honey, or by their unexpected Return before a Storm unforeseen by Men; because I suspect that these things may not be so much the Effects of Instincts, as of a Tenderness and Quickness of Sense, such as may be seen in a good Weather-glass, and found in divers Wounded and Crazy Persons, that are affected with such Beginnings of the Changes of the Air, as are not yet perceiv'd by other men. But among the Peculiarities to be observed in the Conduct of Bees, I cannot but take notice, that after a Fight, I have, not without some wonder, seen them take up the Dead that lay on the Ground, and fly away with them to I know not what distance from their Hive.'

MARKETING HONEY.

I have had a sample of honey submitted to me which suggested to my mind the propriety of a few words of advice. In the first place, the general appearance of the sample was not attractive. The glass jar was not filled, but left a space of about an inch and a half. The vegetable parchment was not neatly and tightly secured, nor was the label put on evenly, but in rucks, and on it the honey was described as 'Extracted by *machinery*,' which does not convey a very rural idea to the mind. The honey was a good colour, but about an inch or more was in a semi-liquid state, and floated on the top; the rest was solid. In some way or other it had acquired the flavour of *hay*. It may have been packed in hay, and left in a damp place, and thus become damaged in appearance and flavour.

Do you not think we should use all care to make the article as attractive as possible, using a neat label—pink, green, or some other pretty contrast to the colour of the honey—and suitably worded? —A 'Bee Brother.'

WINTERING.—VARIOUS METHODS OF PREPARATION.

The exceeding cold weather we have had has made me anxious for my bees; and its being so very fine to-day tempted me to examine them. I had eighteen stocks to commence the winter with, and I find I have lost only one, and that through neglecting to make winter-passages through the combs. I had the whole of them packed with straw between the hives and outer cases, and quilt on top. Some I put pieces of wood, as recommended by you, between the frame ends, and some I only packed as above stated, whilst two others I both packed and blocked the ends, and placed the hives with frames across the entrance. *These two are the only stocks which are entirely free from dampness or dysentery*, although I do not think any of them are injured to any extent.—A. Adams, *Melksham, Jan.* 30, 1881.

THE OLD MONK'S WAY TO PREVENT SWARMS.

'Always follow the Church, my friend,' said the witty Dean to the gentleman who had just elected to have his steak cut from the same piece of rump of beef which the Dean himself had selected. Bees, to wit. An Englishman who travelled through Spain, a hundred years ago, made the acquaintance of an old monk who was wonderfully successful in bee-culture. He openly boasted that not a monk in all Castile was half so successful with his bees. His honey was the admiration, no less than the envy, of all the neighbouring monasteries. But while he carefully concealed the secret of his success from others, an extra glass of wine with our English traveller made him communicative and confidential. The secret of his success was this. In the spring of the year he caught the queen-bee of each of his hives, and then cut off one of her wings. Her majesty was thus compelled to stay at home and attend to her domestic duties, without a thought of travelling or swarming.

Perhaps some of the patrons of Mr. Abbott's capacious Irish hives may be disposed to follow the example of the old Spanish monk, and try the experiment of clipping the wings of the queen-bee. —A Cumberland Parson, *Paington, Feb.* 14.

[We fear the old monk was not so well aware of the secret of his success as he 'made believe,' or he was slyly gulling his visitor. Clipping the queen's wing may hinder swarming for a few days, but it certainly will not prevent the bees attempting to swarm, or the queen from leaving the hive, too often, alas! to fall to the ground and perish. Clipping a wing will prevent a queen flying away with a swarm, and that is all, and in the case of valuable imported queens we practise it largely, often as a precaution against flight on their arriving at the hands of amateur purchasers.—Ed.]

IRISH BEE-KEEPERS' ASSOCIATION.

I think your remarks on my action with regard to the proposed Irish Bee-keepers' Association are written with too strong an infusion of gall and are generally unfair. And the implied contrast between your meeting of nine and my list of twenty-two names is certainly calculated, although not intended, to mislead.

Had the gentlemen whose names you give, instead of residing in or about London, been scattered over England, and had they merely sent you their names and subscriptions, I venture to think that the

British Bee Association would still be *in nubibus*. Probably, too, in sending out your circulars you had access to the list of subscribers to the *British Bee Journal* (which might be described as a list of the bee-keepers in the United Kingdom), an enormous advantage and one not available in my case. Indeed I was led to believe that your subscribers would be very much offended if their names and addresses were disclosed even for the purpose of sending them circulars, inviting them to join the Association.

I admit having 'disbanded my supporters' in the sense that I returned all subscriptions sent to me, as I had no idea of retaining for an indefinite time monies sent me for a specific purpose; but your assertion that I retired from the field in a 'funk' is inaccurate both as regards my alleged retirement and my state of mind.

There are so few bee-keepers living within easy distance of Dublin that I think it would be very difficult to have a meeting here, and for that reason I consider the head-quarters of the Association should be either in Cork or Belfast, the last-named seeming to be an oasis in the desert as far as bee-keeping in Ireland is concerned.—R. SPROULE.

THE IRISH BEE-KEEPERS' ASSOCIATION.

I was very sorry to read in last month's *Journal* that Mr. Sproule was thinking of giving up his post as secretary to the I. B. K. Association. No doubt there will be many difficulties to be encountered in starting the new Association; but I think that with such a man as Sir Wm. Gregory as president, and if Mr. Sproule will act as secretary, we ought to be enabled to get along fairly. What I propose is, that each gentleman whose name is mentioned in last month's *Journal* and on the circulars sent out by Mr. Sproule, numbering twenty-two in all, should try and get half-a-dozen members to join the society. I am sure that each gentleman would be able to get this number in his own immediate neighbourhood. I have promised Mr. Sproule to get twelve members, on condition he goes on with the work.

I should not advise individual members to take any independent action. As soon as the secretary gets a goodly number of names as members, let him send out circulars to each member summoning a preliminary meeting, which meeting should, I think, be held in Dublin; although, of course, country members could scarcely be expected to attend. An 'Acting Committee' for the year should then be formed; but since few of the country members could attend, I suggest that the 'Acting Committee,' consisting, say, of ten members, should be chosen by vote, by each member sending in to the secretary ten names. The sooner we can get the Association into working order the better, as everything should be arranged, if possible, before the summer season is upon us.—J. M. ALDRIDGE, *Eyrecourt Vicarage, Galway.*

[From other communications received too late for insertion we are satisfied that the proposed Irish Association will not be allowed to fall through, and we shall be glad to give all possible help.—ED.]

THE STEWARTON HIVE.

It is always with the greatest interest that I read anything emanating from the pen of so able a contributor to the pages of the *Journal* as the 'Renfrewshire Bee-keeper,' more especially when it has reference to a system he has done so much to develope and improve. I do not pretend to have had the same experience with the Stewarton hive as our friend has, but as I have worked it for sixteen years, and during that time not unsuccessfully, I have a sufficient smattering of the system to entitle me to make a few remarks on his criticisms of the discussion which followed the reading of Mr. Bartrum's able paper on the subject. I agree with the 'Renfrewshire Bee-keeper' when he says, 'To contrast harvest results, one year and one district of country, against others affords no criterion as to the comparative value of any hive or system.' Could I only do this I should feel that to offer any further remarks would be unfair, and that they would have no weight; but as I have worked both the Stewarton and the moveable-comb systems side by side, a comparison of results is not only 'fair,' but instructive. First, however, it is necessary to determine what is meant by a moveable-comb hive, and why I give the Stewarton a place between it and the straw skep, more particularly as the 'Renfrewshire Bee-keeper' says, 'But the Stewarton under discussion, it so happens, is a moveable-comb hive.' I am sorry I am obliged to dissent from this assertion: my imagination is not sufficiently elastic to admit more for it than that it is a moveable-comb hive to a very limited extent, indeed. What I, and I suppose most other bee-keepers, understand by a moveable-comb hive is one in which every frame in the hive is of the same size and form and interchangeable; and by the moveable-comb *system*, that every frame in every hive in the apiary is of the same size and interchangeable, so that we can at any time remove a frame from any hive and introduce it into any part of any other hive with a certainty of its fitting. This cannot be done with the Stewarton: the four centre frames are of the same size, but the outside combs are on bars, and are shorter, and cannot be removed without having, in the first place, to sever their attachments to the sides of the hive; and when removed they cannot be interchanged with the central frames. In each Stewarton box there are, at least, three sizes of combs, and practically there are five, because from the shape of the bars four of them will only fit in their proper places on the box. Owing to this difference in size the trouble of finding the queen is great, even in one body box; but it is still greater if we have to examine the combs in two or more boxes, as is sometimes the case. Contrast this with the facility with which a queen can be found in a moveable-comb hive. We have simply to move the division-board and examine each comb seriatim, replacing it in the hive without that mechanical precision requisite in the Stewarton boxes. Objection is raised to my statement that bees will multiply more rapidly in a square than a Stewarton hive. I did not say bees will extend their combs more rapidly in a square hive, but I did say that 'bees are more inclined to extend their brood-chamber laterally.' This I have been able to prove repeatedly. If there is brood on two combs, and sufficient bees in the hive, and an empty comb placed between these, it is almost immediately filled with brood. By repeating the process at intervals of a few days a hive can be rapidly built up, and may be made to contain brood on every comb in the hive. Instead of spreading the brood in this way, if we were to put the combs underneath it would be no inducement to the queen to breed in them, and she would not do so until she had filled all available space in the upper set of combs. To be able to spread the brood is an immense advantage, as a small stock can be rapidly built up into a large, strong one in a very short time. Last winter I kept a small lot of bees on three combs, which they were able only just

to cover, and early in the spring, by spreading the brood and stimulative feeding, it became strong enough by May to secure from it a large number of sections. This winter, for experiment, I have tried wintering only just as many bees as would cover two frames. These bees were compressed by division-boards, and packed all round with chaff. To-day I have examined them. I found the two combs covered on both sides with brood, and the space so crammed with bees that I have given them an empty comb between the other two, and I expect in a few weeks to build this up into a strong colony. Now, it would be impossible to do this with a similarly small lot of bees in a Stewarton. In these you must have a large number of bees, or you cannot hope to winter successfully. I have examined all my hives to-day. I find brood in all but the Stewartons; these have very much decreased in numbers. In this locality our first harvest is from fruit-trees, and if we wish to reap the benefit of it we must have our stocks in such a condition that they can take advantage of it. If they were left alone they would not commence breeding until they could collect both honey and pollen, and would not be in a fit condition to take advantage of the early flow of honey. Stewartons may be stimulated by feeding, but they are very much longer in filling their hives with brood, and are not strong enough for the early-honey harvest. I have found the bees in these only increasing their populations, whilst others were filling supers. Where the harvest is later this may not be such a drawback as it is here. Now, if our hives are not full of bees, the moveable system has an immense advantage over the Stewarton, inasmuch as by 'contracting the space' during a flow of honey you can make the bees store it in sections placed on the top, instead of filling their stock-hive. How a hive capable of expansion and contraction, like a modern frame-hive is, can be called inelastic, I cannot conceive. Surely it is more entitled to be called an elastic hive than the Stewarton, where elasticity only consists in its capability of sudden expansion from one to two, or from two to three, boxes.

I am sorry I cannot agree that Stewarton supers give more honey than sections. By proper management one can always make sure of some sections being filled, even from small colonies, at times when nothing would induce bees to store honey in Stewarton supers. It may be 'an axiom in the Stewarton system that as soon as the central combs are seen to be sealed out the super can be safely removed complete;' but my bees are certainly not inclined to carry out this rule. Last summer I had three supers on one Stewarton. The first was nicely filled; the second and third were well filled in the centre, the outer combs not being sealed over. Admitting, however, that the 'Renfrewshire Bee-keeper' has the outer combs filled and sealed over before the central ones, these outer combs are ready for removal, and for the appearance of the comb should be removed, as soon as completed, instead of being left for the bees to discolour them by walking over them and accumulating extra wax on the coverings. Those who like to eat comb-honey do not, however, care to eat a large quantity of wax; and it is here I find such a superiority in sections over supers. As soon as the sections are only just sealed over they can be removed, and the honey which the bees waste in elaborating wax to thicken the cappings of the cells in supers is instead stored in sections, to the profit of the bee-keeper. No comb-honey taken from a super can equal in appearance nicely-worked 1 or 2 lb. sections, the wax-coverings of which are so thin and transparent as to show the outline of every cell. These are also much more saleable. There is no mess in cutting out the combs; and even if the bars go with them, as suggested, there is a risk of breaking the comb, before one gets home which the sections are less liable to—for this reason, sections do, and will always, command a higher price; and no bee-keeper who understands the management of bees in moveable-comb hives, and has once worked them as they should be worked, would be willing to return to the large supers in fashion some years ago. The Stewarton is a strong-hive system, and only as such can you expect to get much honey. But at what an expense is this strength kept up! In the first place, it requires, at least, two good swarms to start a colony. Half the number, or even less, can be made, by spreading the brood, to fill a moveable-comb hive in very much less time than it takes to fill a Stewarton. In the autumn it is much less trouble to get a stock strong enough for wintering in frame-hives. For queen-raising you are obliged to have a number of nucleus boxes, in addition to the octagonal body boxes, and in this way accumulate a quantity of useless plant. Queens can be raised in full-sized frame-hives by using division-boards; and these nuclei can be built up into full stocks at any time. Although I do not believe in always 'pottering amongst bees,' and quite agree that with some 'such disturbed hives don't usually give great returns,' yet for success a certain amount of disturbance of the bees is necessary, and the results obtained will always show whether the bee-keeper has worked in harmony with the natural instincts of the bee. All persons are not alike, and some could never be made bee-keepers. With such persons any manipulations with moveable-comb hives would do more harm than good; but with one who has his hives under his complete control, knowing how to do a thing, and doing it at the right time, the case is quite different. Such a person can work his bees with both pleasure and profit, and, with a little care, can secure a larger quantity of honey, if he use moveable-comb hives, than he could if he adopted any other system.

The Stewarton is certainly far in advance of the straw skep, and is very useful as a stepping-stone to the better system of moveable-comb hives. Perhaps if the 'Renfrewshire Bee-keeper' were to adopt the modern system of frame-hive management (which is very different to what it was some years ago), he would come to the same conclusion with myself, viz. that only moveable-comb hives which are under the complete control of the bee-keeper yield the largest harvests of honey and the largest profits.—Thos. Wm. Cowan, *Compton Lea, Horsham. 18th Feb.*, 1881.

HOW DO BEES GATHER POLLEN?

You don't know my grandmother. I can assure you she is a most estimable woman, and when she places her spectacles on her nose, and crosses her hands in her lap, you may expect something good. Did I tell you she is passionately fond of her bees? Well, I intended to do so. She is considered an authority here, although she does not go in for the newest scientific 'notions.' When she comes down to see her great-grandchildren we have a regular bee discussion every night. I read up the *Journal* and go in for the scientific business. She reads up the *Journal* and goes in for the practical. She was with us when your February number arrived; and I read it all over, commencing with the *British Bee Journal* and ending with the imprint. If you had heard her running comments, you would have been, as I was, very much surprised. I am now going to give you her remarks on your own advertisement about 'Artificial Pollen.' I quote it again:—

'Artificial Pollen, newly ground and direct from the mills, 6*d.* per lb. In 7-lb. bags packed free and delivered to Southall Railway Station for 3*s.* 6*d.* per bag. Guaranteed perfectly fresh, and if put into crocus cups the bees will take it madly; *affording most interesting study of the use of the tongue*, the fore-legs, and the pollen-baskets, &c., &c.'

As I finished the advertisement she folded her hands across her lap, so I knew there was something coming, and I waited patiently to hear her begin.

'Now, then, I am sure the man is wrong' (please

excuse grandmother's homely way), 'when he says the bees take pollen with their tongues.'

I stated that the Editor of the *B. B. J.* was an authority on the point: but she would not be convinced.

'My dear boy,' said she, 'I have spent hours and hours watching my bees in all sorts of flowers, and you never will persuade me that they take pollen with the tongue. I admit,' she continued, 'that you may get occasionally, for anything I know, a trace of pollen in the honey sac of a bee. I wouldn't kill one to see, but I am confident that if pollen is found there it has got in there accidentally, unless it is gathering pollen only.'

'How accidentally?' said I.

'Well, you can understand some grains of pollen falling off the anthers of a flower and either getting into the nectary (see sketch), or lying about the orifice. Well, if a bee in her search for honey happens to get pollen on her tongue, I call that accidentally. In that case I feel confident that *that* cargo of the bee is lost as *pure honey*. The slightest trace of pollen in honey spoils the flavour, and the contents of that bee's honey-sac will only be used for the manufacture of bee-bread.'

I regarded the old lady in wonder.

'Did you ever, John, really watch a bee with a magnifying glass as it dives into a cherry blossom, or probes a flower? If you did, you will have wondered at the amount of labour she goes through, and apparently for no object. Her head is stationary, and her tongue deeply imbedded in the nectary, but her legs are moving constantly. I call it dancing. After visiting several flowers in this way, portions of the body become of a bright orange, or yellow, or a slate, or other pollen colour. The portions most affected are the head, the thorax, and the legs. Then you will see the bee fly away and probably alighting upon some object out of which she has no chance of extracting honey, viz., the wall, your hand, a warm stone, or a tree. Watch it narrowly now. It begins to work its legs over its head, then one leg over the other. Then the back is swept with the hind-legs, and in this way the pollen is drawn down and caught on the pollen baskets. Then it goes to work again, and when its full cargo of honey is safely stowed away in its hold, and its deck load of pollen is safely trimmed in its baskets, the little living ship sails merrily homeward.'

'But, grandmother,' said I, 'have you ever tried your bees with the artificial pollen?'

'That I have, my boy. Don't you remember that I tried the pea-flour last year after what you told me, and if you will just have a little patience with an old woman, I'll tell you exactly what I did and what the result was. First I mixed up some chaff and pea-flour in a saucer, and set it near the hive. The bees did not seem to notice it, but on putting a bit of old comb with honey in it in the saucer, I soon had them there in scores. When they had found their way to the saucer I removed the comb. Then I out with my big magnifying glass (that cost me 10*s.*) and watched the little rogues.'

'Well?' I said, as she seemed to pause.

'Well, they didn't use their tongues that I could see, and they gathered loads upon loads of the pollen.'

'And you believe that you would have seen them if they had used their tongues?'

'I'm certain of it. They rolled in the chaff, and they kept clawing it, like, in their legs, and they tumbled and got up again. And sometimes they would hover over the saucer quite close to it, making as much wind with their wings as possible. This made the flour fly about themselves and the others, with the result that they all became more or less white. Then they would set to work to curry-comb themselves with their legs, passing the pollen down towards the hind-legs; and when their load was "all on board," as the sailors say, they would fly away home.'

'Then you really don't think, grandmother, that bees ever collect pollen with their tongues?'

'Never,' she replied, 'unless by accident, as I have said, after which a good bit of tongue-cleaning must go on, if that bee wants to bring in pure honey at the same time and on the same journey.'

I thought the old lady had probably said all she had to say on the subject; but she re-folded her hands and re-adjusted her spectacles:—

'Next, I put away the saucer with the flour in it, and I set in its place a similar saucer quite clean, and placed a small line of flour across it. I thought that if they saw the flour was scarce they would use the tongue and clean up the plate. Before long two or three bees came, and ran over the plate as if very much surprised to see the store all gone. Soon they discovered the line of pollen, and I watched attentively.'

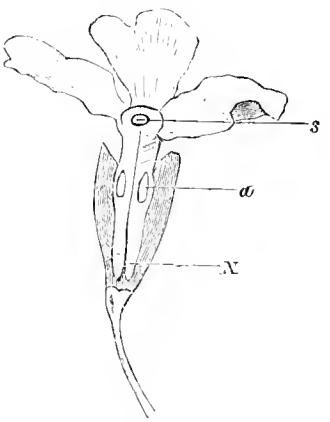
'Well, I suppose they rolled in it just the same?'

'No, there you are wrong. Most of them went away again, but one or two *hovered* a bit, and blew the pea-meal all over the saucer. They never once put out their tongues.'

'Have you ever tried putting the pollen in crocuses as recommended here?'

'Never: but I mean to try this spring if there are any crocuses about the garden that I can get the bees to haunt. Now, did you never see a bee coming home all covered with pollen of an orange, or yellow, or a slate colour? Well, to my mind, that bee shows it has been out doing its duty to the flowers. I need not begin to be giving you a lecture on botany, the component parts of a flower, or their relationship. Lend me your knife, and bring me a primrose from the garden.'

I did so, and she made a section of the flower.



'Now look here. In order to propagate its species the pollen of a primrose must come into contact with the stigma which is on the top of the pistil. A little way down the throat of the flower you can see the anthers or pollen-producers adhering to the side of the tube. That is to say, the pollen must come *up*, as the primrose grows erect. Now, you see the stalk of the pistil extends down to the very bottom of the tube, and it is at the very bottom of the tube that the honey is secreted, as every schoolboy knows who has ever sucked a primrose. Now, a bee has no occasion to touch the stigma with its tongue, but it *must* touch that organ, as well as the anthers, with its head or its chin (?) when it probes the flower with its tongue. Thus the pollen is disseminated without the use of the tongue. Now, if the bee lifted any quantity of pollen with its tongue, or if that was the normal way of gathering pollen, why should it take the trouble of, and exhaust itself more or less by, *dancing* with its legs over the flowers when the tongue is buried, sipping the honey, if it is not for the purpose of collecting the pollen with its legs while its tongue is engaged at the honey?

'The advertisement,' she continued, 'is quite correct, for if you use artificial pollen it will afford a most interesting

study "of the use of the fore-legs and the pollen-baskets;" but when he says that it affords an interesting study of the tongue, I for one don't agree with him;—and you may tell him that.'

I stared at my grandmother awe-struck.

She quietly put off her spectacles. She had finished her lecture.

'I know Mr. Abbott is a clever man, and a wonderful operator with the bees (for, you know, I saw him at Newtownards), but you may write to him if you like and give him my opinions.'

So, Sir, in pursuance of my grandmother's instructions, I have tried to write out her views. I have also tried to sketch the primrose the old lady dissected. Perhaps in these dreary nights some of your correspondents will give their opinions (yours are already known) and enlighten the old lady if she is wrong. But as I hope to read their observations to her, I hope they will please deal tenderly with her. As the artificial pollen feeding season is now on, her observations may induce some of your readers to experiment further in this direction.—A Newtownards Bee-Keeper, *Feb.* 1881.

STEALING OR APPROPRIATING IDEAS, &c.

In the discussion on the Stewarton hive I observe Mr. T. W. Cowan, page 169, says, 'By following out his plan published some years ago, and now universally adopted by advanced bee-keepers, viz. that of contracting the brood-chamber of a hive,' &c. I have not seen that publication mentioned by Mr. Cowan. When I observed the above statement I put the query, 'Am I also a sinner in stealing Mr. Cowan's inventions?' It is now thirty-two years since I first used close-fitting dividing boards, and have sent out many hives with these the last twenty-five years. If Mr. Cowan's publication is anterior to that I will at once relinquish the claim to him or to any other person that can show they superseded me. I do detest that now too common practice of parties claiming or making it appear as if they were the inventors of what they have no claim to. Some of these delinquents I will, with your permission, notice.

About eighteen months ago, among other absurdities, the following appeared in the *Dumfries Standard*:—'Those that are conversant with the economy of a hive are aware that several queen-cells exist at the same time. A number of cells are formed for the creation of queens, and in these cells they are reared and imprisoned until they are wanted. Should the ruling sovereign die or be deposed and killed a cell is opened, and a young queen let out to succeed her; and when a swarm is ready to hive off, one of the reserved queens is let out of the cell to go with them. In these cells, however, they are kept close prisoners, excepting when thus required, the other bees feeding them, unsealing the cell to do so, and sealing it again after it is done. In dividing a hive, therefore, a frame with some brood-comb should be transferred to the next box. If there is a royal cell in this comb—and that is easily ascertained—the colony will at once liberate the queen from it; if there is none they will at once begin to form a cell and rear a queen. This is not a tardy process, and in a short time the colony will be complete in all the conditions of government, and vigorously engaged in the manufacture of honey.'

Not content with these unparalleled effusions of nonsense, the writer claims the right to Mr. Armstrong as the inventor of the Lanarkshire frame-hive,—in whose interest the foregoing was written!

The next I have on my list is Mr. John Thomson, 102 High Street, Dalbeattie, in *Journal of Horticulture*, page 541, after describing Mr. Steele's profit of 6*l.* sterling from each hive—*a very good average*,—(italics mine). In another article he describes what seemed to me a very good description of the American 'Eclectic' hive, with some of the Lanarkshire hive's properties. Mr. Thomson tells us that this is the Dalbeattie hive he has improved after some years; then tells us that Mr. R. Wilson is the sole maker. I was much amused at Mr. Thomson's letter, and would have put some questions to him through the *Journal* in which it appeared. One of them would have been, How long had Mr. Thomson used bar-frame hives? as I was under the impression that it was only after the Bee Show in connexion with the Highland Royal Agricultural Show, held at Dumfries in 1878, that he had adopted the frame-hive. But that *Journal* refuses to insert any correction of error I send. Should the foregoing meet Mr. Thomson's eye, perhaps he will favour us with the progress of his inventions, and what it was that prompted him to so rapid a success.

But apart from this I happened to have an intimate acquaintance thirty years ago of an old bee-keeper—a perfect genius, who used to recount to me his career in bee-keeping, as well as his inventions. One of these was what I observed was also claimed by the Americans, viz. his plan of a gun being fired on a swarm issuing from a hive. So far as I can recollect this plan would be invented ninety years since. Long before the percussion cap was in use he invented something of the kind, but being a common tradesman, was uncommon in being a very quiet and unassuming being. Yet, nevertheless, his presence was courted by many men of talent. His power in mechanism was great, fond of firearms, and though not a professional, made beautiful fowling-pieces. He dreaded mice getting inside a hive, knowing well that the smell of these rodents was highly injurious to bees. He kept trained cats to kill the vermin. On the death of one of these—a favourite—the old man was said to have shed tears. So loath was he at its loss that he preserved the cat, and formed it into a very ingenious trap, so that when set its jaws were extended with a tempting bait, and the mice it caught after death were perhaps equal to those it caught while in life. I am perhaps digressing from my subject. The selling of the old man's effects, twenty-eight years ago, devolved on me. Some of his hives were of a very ingenious description, the most of them had moveable bars, and several had frames, while not one of them lacked floor ventilation, and all of them possessed the outside case which held the hive and packing. I have mentioned these facts to prove that long before the Americans knew anything of chaff, the Scotch in the west had 'brains' to be able to invent nearly a century since what Mr. Raitt boasts of the Northerns (see Vol. V., page 199) having 'brains' to adopt. And pass over, perhaps, a further improvement in that of the Stewarton hive, condemning contemptuously the very hives that gave birth to scientific bee-culture, and which he knew nothing about.

I quite agree with you, Mr. Editor, when you advised that something should be done to give honour to whom honour is due with inventions; it is a subject that should be taken up by some disinterested parties connected with Bee Associations; and as a beginning, I would suggest that a memorial and testimonial be got up amongst us who have benefited so much by comb-foundation the last twenty years, and present it to the *German*, the inventor of comb-foundation, and machinery for making the same. It is he who deserves the name of Public Benefactor, and who has been the means of so much improvements in hives. And instead of giving prizes year after year for the same thing, let that be done away with, and let a memorial be awarded for new inventions only, so that it will preclude the possibility of any one stealing and glorying in the invention of others.

In regard to judging at Shows, there has been so much bungling that I think the time has come that prizes should be awarded to the highest merit, decided by owners of the articles pleading the properties of their exhibits after

the manner of our County Courts, before a qualified Judge, whose duty it would be to see that exhibits possessed the properties claimed, which would be satisfactory to all, and at same time ideas would be retained by the inventor.—A Lanarkshire Bee-keeper.

Paper for Hives.—*Employment of cardboard in hive-making.*—It is now several years since we have employed, as a trial, double-sided hives, the external one being of cardboard painted with oil, and, up to the present time, they have stood the ordeal of winter better than hives made entirely of wood. Unless a heavy and costly covering is employed for the latter, they deteriorate from dampness and the action of the sun, and it is on account of complaints received that our manufacturer, Mr. P. de Siebenthal, had the idea of trying pasteboard. Satisfied with our experiments, we now intend to employ this material on a large scale. For hives in the open the roofs are even a weaker side than the walls, and, in America not less than here, a fully satisfactory system of covering has not yet been found out. We have tried zinc, which has the great fault of being much too sensitive to the variations of temperature; tin, which is too dear; sheet-iron, which is both dear and heavy, especially if it is galvanised to avoid rust. And, finally, the wood alone, which even when well painted is liable to warp. After we had decided on the advice of our manufacturer, to order sloping roofs of thin wood covered with painted cardboard, we read in the *British Bee Journal* for January that a beekeeper recommends covering the roofs of hives with two layers of strong brown paper painted with oil; his process has stood two years and the covers remain intact. 'The paper,' continues he, 'is warmer, lighter, and naturally much cheaper than the zinc, which warps, draws the nails, and allows the wet to penetrate.' Again, in the *Apiculteur d'Alsace-Lorraine* for December, we learn from the pen of M. Ch. Zwilling that M. Cæsar, a bee-keeper of Forbach, makes hives of papier-mâché. The walls of this hive is made of cardboard, which by undergoing a certain process is made as durable as wood. The two pieces of pasteboard that form the wall are separated by a space of about 2 inches filled with dead air, which being a bad conductor consequently maintains the heat of the hive. The walls and floorboard are fixed on light supports of wood. The cover, porch, &c., are moveable. M. Cæsar also makes sheets of perforated cardboard covered with a good coat of varnish. These cards are a perfect imitation of the metal sheets, and are a great economy on the latter. They are also superior to the wooden separators, as the perforations need great precision, and are liable to enlarge and shrink on account of the porosity of wood.—*Bulletin d'Apiculture pour la Suisse Romande.*

Echoes from the Hives.

Halstead, Essex.—Wintering.—'Since the frost I have examined my stocks (twenty-one in all), and find them in a healthy condition. They are all in bar-frame hives, with the exception of two in skeps. One Ligurian stock is in an "observatory" hive. The frames are made and arranged on the "Giotto" principle, as suggested by you, but the wood is only half-inch. Of course I have wooden shutters to the glass, and have covered the frames with felt. The bees are in splendid condition.'—John Urella.

Holl, Eachabers.—'Here, as elsewhere, 1880 has been a splendid honey season. I had an average profit of 3*l.* 5*s.* per stock wintered. My best harvest was from a swarm of 19th June, which gave me 60 lbs. comb honey in sections, quite pure, mostly heather; and 13 lbs. run honey; and seven frames left to winter with, averaging 6 lbs. I sold nearly all my comb-honey at 1*s.* 3*d.* per lb., and run at 8*d.* per lb.' C. F.

Gothenburg, February 1st, 1881.—'Last year I was happy to establish a Bee-keepers' Association—by name "Friends of Bee-keeping," and I have been appointed its secretary. Last year I went to the cottagers' own homes, informing and teaching them the more humane way of managing the bees. The result has already been, many bees have been saved from the sulphur-pit, the value of the bees has increased fifty per cent, and the people in this province ask and beg me to come and stay with them several times a-year, and several days each time, for instructing purposes. The result has been very satisfactory indeed. I commenced last autumn to give lectures at our bee-school here in Gothenburg, where *all* information is given *free of charge;* and I consider the diagrams you are to send me will very much facilitate my labour, being of large dimensions. Last year was in this country a very profitable one, the hives giving good swarms and plenty of honey. Where our Association has had influence the bees are wintering very well—I hope successfully—all having young queens, young bees, plenty of food, and warm hives—perhaps rather too warm, because in these warm days of January the temperature has been + 3° C., and I open widely all the entrances of the hives in our bee-stand.'—H. S.

The Lea, Hebden Bridge, Yorks., Feb. 10th, 1881.—*Wintering.*—'I must confess that keeping bees in a healthy state through the winter in the wooden bar-frame hive has been my greatest difficulty since I began to practise with them, having lost some very valuable stocks of Ligurian bees; but seeing their advantages in other respects, I was determined to master them; and now, thanks to the plain instructions you have given in your valuable *Journal*, I can put them up in the fall, and feel as easy about them as I could in a straw skep. My stocks in the frame-hives are at present, as far as I can judge, in first-rate condition. I have now no fears about them if the coming season be favourable. Your answer in this month's *Journal* to "An Amateur" is first-class, and ought to be read and well thought out by every bee-keeper in the country; and if practised I feel certain it would lead to far greater success than has hitherto been attained by the bee-keepers of this country.'—John Hartley.

Queries and Replies.

Query No. 373. — *Transferring from Straw.*—'Amongst his other successes the bee-keeper of the Vosges Mountains,' says Mr. G. F. Pearson (February *Journal*), 'made his bees *build down into frame-hives.*' Why, then, prizes for transferring? Why destruction of brood in spring, or of honey at a later date? Why the 'ticklish' operation of transferring at all, if the natural and reasonable way, and the way by which the 'countryman' may possibly be induced to travel, is to place the parent eighteen-penny rustic upon the frames of a modern 'eclipse,' cover up the corners, and give access only through the lower domicile, stepping in and emptying the granary in due course—that is, when the brood-nest has been transferred to terra firma, as surely it would be?—C. Walkden, *Ashwell, Herts.*

Reply to Query No. 373.—We take it that prizes have been offered for transferring that the public might gain practical knowledge of the best way of doing the work, and of the ease with which it may be done, even under difficulties, when that knowledge has been obtained. We have no defence to offer for the destruction of brood or honey, and assuredly have never counselled a course that would bring about either result. The building-down plan is common in England as a means of stocking frame-hives in the spring, but is not available in autumn because of the indisposition of bees with full

hives to extend their combs at that time of year; and it is not generally recommended even in spring, because it puts the old skep in the position of a super to receive the new honey, which should properly be stored in new combs. Our method of transferring (see the leaflet on the subject*) destroys neither brood nor honey, but renders all good combs available for the new brood-nest. Nevertheless, with new foundation so cheap, at hand, and the certainty of new straight combs being built out from it within a few days, we have begun to regard the labour of 'transferring' as a waste of time; and as the process often leads to robbing, and is unfortunately liable to foster foul brood or other disorders that may be lurking in old combs, we are inclined to recommend that it and all old combs be dispensed with altogether.—Ed.]

Query No. 374.—*Dry Sugar for Bee-food.*—Do you not think it probable that the sugar may become moistened by absorption from the atmosphere, and that it is not therefore necessary for the bees to consume their own exhalations, or that that state of things would be modified by the moisture from the atmosphere? I refer to the experiment now being made by 'A Warwickshire Bee-keeper.'—J. U.

Reply to Query No. 374.—The moisture in the atmosphere of a hive must, in a very great measure, be due to the exhalations from the bees, at least we think so.—Ed.

Queries No. 375.—*Mixing-up of Queens. Encasement on Uniting. Value of Imported Queens. Sections in rear of Brood-nest v. Supers.*—I united three black stocks in autumn. Two of the queens I found dead, and the survivor apparently all right and laying within two days. On the third day I prepared to add a fourth stock, with a hybrid queen, to bring it up to the sufficient strength. The two hives were alongside each other, and on opening the one with the three swarms, to remove the black queen it contained, I found her encased, and, with difficulty, rescued her. Looking a little further I found a yellow queen in the same predicament. Concluding that the queen of the hive alongside must, somehow, have got lost, I opened it up, to find the same state of matters there—a yellow queen being furiously assailed. It seemed very odd, and on looking up some nuclei about ten yards distant, one of the queens was missing. I infer that she had gone into the hive with the hybrid queen, who, declining to fight, sought refuge next door. I attempted to prove that this was so by putting the first-found yellow queen into the adjoining hive, whence I inferred she had come; but she flew off on my dropping her on to a comb, and spoiled my proof. Is such a mixing-up as this common, and how do you explain it?

2. I find my attempts at uniting met by obstacles. In one case in autumn, after scenting and smoking most thoroughly, the queen I left to head the colony was encased at once, and it was a week before she could be safely uncaged, three sets of queen-cells having been raised meantime. Is this difficulty a frequent one practically? The theory, of course, I know, but theory and practice have a knack of falling out.

3. What is the experience of apiarians in regard to the value of imported Ligurian queens? I am told by a very considerable number of friends that few of them live beyond a year. My own experience of Italians only dates from last season, so that I do not know. But of the queens I had then, 70 per cent. or thereby were practical failures. Even when introduced all right they made no headway. Those that got established did very well; I do not know but they stood good for themselves and their less fortunate sisters. I should like to know, however, what experience says on the point. Has the large demand for queens led to the producing of large numbers under unfavourable conditions, so that they reach us, after their long journey, in a state of exhaustion from which they never recover? If they come to hand *alive* it is held to be all right; but there is a life which is next step to death, and that is reached in the hands of the unfortunate buyer, who gets blamed for awkwardness.

4. I should like to hear more on 'Storing in the Combination hive *versus* Supers.' My experience is entirely in favour of the latter. That is, whenever my bees get a chance of space *above* the brood-nest they take it in preference to space on a level with it, whether behind or at the sides. This last season I had to be from home for a month, and put supers on hives that were working in sections below, as I thought they should do more than fill them. On returning I found they had taken possession of the supers, and all but filled them, while the sections below remained exactly as they were. I understand you to affirm that the space *behind* the brood-frames should be taken to with equal readiness.—Fifeshire, *January*, 1881.

Replies to Queries No. 375.—1. It is not easy to account for the 'mixing-up' which occurred, but it is probable that some of the bees of the united (?) stocks got into the nucleus hives containing the yellow queens, and caused one of them to abdicate, and that she attempted to join the most populous and busy, and so caused the commotion. The black queen first left with the united swarms, appears to have been comfortably accepted, and laying until this occurred; and it is possible (and a debateable point) that her encasement was the result of love on the part of her own bees and for her protection, as the encasement of the yellow queen was of hatred and dislike. Such cases do not often happen, and when they do it is usually through the hives being in too close proximity to each other—a feature of which we have no evidence.

2. The difficulty experienced in uniting is fully in accordance with theory, supposing one of the lots of bees to have been aged and broodless, and the queen of the other lot to be the one selected to head the colony, as is generally, and with reason, the case. We have many times alluded to the difficulty of uniting aged bees; the custom, arising from long experience, has been to join both bees and queens, as was done in the case of the three stocks, and let the bees settle which shall be allowed to live. Had this been done in the present case it is probable that one would have been accepted, and the chances are that it would have been the one belonging to the more pugnacious—*i.e.* the more aged and least civilised bees. This is a suggestion only, the result of close experience, and it may not apply in all respects in the present instance, but it is worth consideration, and may help to solve the question.

3. It cannot reasonably be doubted but that privation, confinement with sickly bees, and the other ills likely to arise from queens being sent on long journeys, is detrimental to them, and in many instances shortens their life, or interferes with their fecundity. They are never (?) sent forth until they have begun to lay, and then their energies are suddenly cut short, and they are put up in boxes, and the business and pleasure of their life suspended in the heyday of its enjoyment—a measure that cannot be beneficial to them. The evil arising is common to all violent interference with nature, but we are not prepared to admit that it is so great as our querist suggests. That many bee-keepers lose 70 per cent of their imported queens is more often their own fault than they are willing to admit; and much of the loss and the seeming want of fecundity in the queens arises from the absurdity of uniting, or attempting to unite, them to weak and queenless stocks, instead of to good, prosperous breeding colonies, which will generally accept them under due precaution, and give them the opportunity of displaying their power and energy. Queens apparently dead from fatigue or neglect cannot be any the better for their trial; but we never hesitate to introduce such, if by any possibility life can be restored, and in full colonies the heat and surroundings enable them to do well. The evil for-

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tune too often attending imported queens arises, as we have said, from their being put into poor stocks. Hundreds of bee-keepers never think of purchasing a queen for the natural purpose—the improvement of their bees; but as soon as they find a stock queenless they send for a Ligurian queen, which, nine times out of ten, gets encased and injured on her introduction to the queenless, broodless old bees, or, if accepted, is unable to perform her enjoyable duty through the bees' incapacity to assist her. These are our experiences, gathered, not from our own apiary alone, but from the regretful reports of others, too often in the face of warnings. Our advice to those who intend to introduce the Ligurian element is, to do it by swarms if possible, or by the introduction of queens to full colonies, the dethroned queens of which will be quite good enough to risk with old queenless bees or with those containing fertile workers.

4. We quite agree that bees will be more likely to go into supers than they will into side or rear boxes, if they are all available in a hive at the same time, because the super being the warmest (being above the main body) will present the greatest attraction and afford the most congenial conditions, under the circumstances, for storing; but the fact in no way disproves our argument, nor does the experience in any degree affect it. It is acknowledged on all hands that bees store in the warmest parts of the hive—notably immediately around and above the brood-nest; and it is the unwelcome experience of thousands of bee-keepers that they will not enter supers at all—or having entered, remain there—except under the most favourable conditions of population, temperature, and surroundings; yet they will always (income permitting) store honey in the body-hive, even to the limitation of their brood-nest and the prevention of egg-laying by the queen. Everybody (?) knows that as soon as bees gather more than they consume they store it, and what so reasonable as to give them facilities in the chamber they love for storing it in the form most agreeable to their owner. The experience our querist reports is beside the question. If he wishes to try the case, and convince himself, or convict us of false reasoning, let him place six colonies, of equal strength in all respects, in an enclosure, under even conditions as regards position and the chances of well-doing, and fairly try them, simultaneously and alternately, on the 'supering' and 'combination' or longitudinal principles, and we shall be content to abide the result. Give (to the bees) the choice of two chambers in the same hive, they will naturally choose the least disagreeable; but simply enlarging from time to time 'the temple of nature' in which they worship, commends itself to the common sense of bee-keepers, and is proved to be in accord with the instinct of the bees themselves, and on their evidence we are content to rest our case.—Ed.

Query No. 376.—One of my best and strongest hives has died this winter. It is a plain wood-hive, about 12 inches square, and was filled with comb to about 2 inches from the bottom. In the autumn the bees appeared in perfect health, and were very strong; they are now all dead, with plenty of provisions in the hive, and a very large quantity of dead bees still amongst the combs. There does not appear to be any trace of dysentery; the hive, sides, and bottom board, were very damp when I examined them. What do you suppose must have been the cause of death? The hive was standing in a bee-house, and was well covered up with straw; on the top were two perforated zinc slides, and over these some canvas of three or four thicknesses.—J. P., *Witton Gilbert, near Dereham.*

Reply to Query No. 376.—There being no evidence of disease, and no suggestion of queenlessness and old age of the bees, we can only conclude that they were imprisoned by the cold between (or amongst) combs from which they had consumed all the honey, and were not able to get to the stores in another part of the hive Box-hives, fixed combs, and no winter passages through them! Oh, mi!—Ed.

Query No. 377.—*Extracting Honey.*—Will you please inform me if the comb will not be very liable to break out of the frame whilst in the extractor?—J. P., *Witton Gilbert.*

Reply to Query No. 377.—Crooked combs, and those not built evenly within the frames, are liable to injury; but those built straight and even ought not to be damaged at all. The combs should be placed flat against the wirework of the cage or revolver, and the machine set in motion without jerking.—Ed.

Queries No. 378.—I have several stocks, and among them two Ligurian casts of last year, which, not being strong, I intend to unite next month. Kindly tell me—

1. Will it be too early to make a small swarm from a black stock, and introduce one of the Ligurian queens into the black stock, putting the black swarm into a hive with comb-foundation?

2. Will the swarm and the stock with Ligurian queen be likely to swarm during the summer, and can I prevent them doing so?

3. Would cutting out constantly queen-cells prevent them swarming? But I do not like disturbing them so often during the honey season.—Mat. Steele, *Heath House, Runcorn, Feb. 16th*, 1881.

Replies to Queries No. 378.—1. It will be very much too early to make swarms with the hope of success. May is early enough, as a rule. You propose to unite two lots, and divide a strong one, which will not, we take it, improve matters very much. Better sacrifice one queen than ruin a stock in trying to utilise her.

2. They would be much more likely to dwindle and die before the summer comes through the cold and absence of every thing swarms and weakened stocks most need.

3. Cutting out queen-cells will not absolutely prevent swarming. Bees often swarm out when no such preparation has been made. Disturbance in the honey season would be less dangerous than the proposed operations at the present time.—Ed.

NOTICES TO CORRESPONDENTS & INQUIRERS

Professional Bee-keepers.—On Page 211 of this *Journal* will be found an extraordinary and libellous remark by Mr. Cheshire with regard to his 'professional' brethren, which in their behalf, and for his own credit sake, we think he ought to explain, and we sincerely trust he will do so, if he can.—Ed. *B. B. J.*

Mr. J. Delwiler, *Toledo, Ohio.*—The *British Bee Journal* may be had from here direct for 6*s.* 6*d.* per annum; whoever is charging you more is swindling you. We exchange in bulk with *Gleanings*, Medina, Ohio; *The Bee-keepers' Magazine*, Park Place, N. Y.; *The Bee-keepers' Guide*, Kendeldville, Indiana; and *The Bee-keepers' Exchange*, Canajoharie, N. Y.; and they ought to supply American bee-keepers at the same rate we offer the *Journal* here; we ask no premium on their journals here.

Use of Salicylic Acid.—Divested of all technicality, simple as A B C, Mr. Cowan's recipe directs that an ounce of salicylic acid and an ounce of powdered borax shall be dissolved in two quarts of water; it is then the 'salicylic solution' for painting hives, &c., for disinfecting purposes. To disinfect bees one ounce of the solution should be mixed with a gallon of syrup, or a teaspoonful with a pint will give the same strength, and we do not know of any better formula.

M. A. L., *Plimley.*—*Want of ventilation* is, without doubt, the cause of the floor-boards becoming thickly covered with dead bees during the protracted season of cold. We appear to be everlastingly giving directions in the

Journal which, if bee-keepers would accept as the outcome of actual experience, and act upon them, would be the means of saving an immense amount of trouble and loss. Our suggestions are often, however, not complied with because the more limited experience of many of our readers has not taught their value, and hence their calamity comes upon them suddenly and with dire effect, when, as a matter of fact, disorder should be well-nigh impossible. We find it, as a rule, very much easier to guard against bee misfortunes than to advise as to their reparation, particularly when the subjects of them have gone through some of the stages that generally terminate in foul brood. Having already dried the hive with warm tiles, we can only suggest that the crown-board be perforated, to facilitate the upward escape of foul vapours, and that the bees be fed liberally for a few days with salicylised syrup, in the hope that they may disinfect, not only themselves, but the cells in which their loose honey is stored. The perforations in the crown-board (which is a fixture) may be four or five, an inch and a half over, covered with perforated zinc and flannel, to permit ventilation and prevent draught.

FISHPONDS, BRISTOL.—*Stocking Observatory-hive.*—Our correspondent has made a square observatory, after the pattern of that described on page 97, Vol. VII., 'Abbott's observatory-hive,' but, unfortunately for his own comfort and convenience, has not made it of suitable size to receive the frames of the hives in his apiary, and he is now at a loss to know the best means of stocking it in the coming spring. As 'our' hive is of similar shape and make to ordinary hives, except that it is of glass, and can be manipulated for observation purposes without being opened, we see no reason why it should not be stocked with a swarm in the usual way. We would fit up as many frames with comb-foundation as the swarm will be able to occupy, and put them in the front part of the hive, covering them with a quilt in the usual way, and darkening them, and, when the time comes, would pour the swarm into the back part, that they might run under and amongst the frames of foundation. It would be well to have the extreme back frame filled with wooden or other foundation that will not stretch, as many bees may at first cluster on it, and if flimsy, distort it; and when they have taken possession, would cover them snugly, as in an ordinary hive. After a day or two the quilt may be removed, and the glass-cover (crown) put on, and the bees watched as they proceed with their wonderful work, and frames of foundation added as they may be required.

Uniting Bees.—Our leaflet, and many repetitions in *Journal*, advise that bees to be united should be made to gorge themselves with scented syrup, and reduced to a common state of poverty (with nothing to defend, their combs all being removed), and that they be then mixed up in one lot, before being restored to the combs in which they are to live. The method adopted of adding a driven lot to another lot already in possession of their combs ended, as is commonly the case, in the slaughter of vast numbers of them—a result our directions are intended to prevent; and the fact that bees will *sometimes* unite peaceably without such precaution is no argument against that they are intended to advise.

Mildewed Combs and Pollen.—If left with the bees, they will clean up the comb, and throw away the pollen, at great cost of labour and material: for in extracting the pollen pellets they will destroy and have to rebuild a large number of the cell walls. We would prefer to remove the comb altogether, and substitute a sheet of foundation; it will be saving the labour of the bees, and there will be no liability to ill effect from the mildew. Old combs are really not worth preserving, now that foundation is so cheap.

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MONTHLY RETURN of CONVICTIONS (not including those obtained by the Police or by kindred Societies) obtained DURING NOVEMBER, 1880, as follows:—

Horses—Working in an unfit state	167
Horses—Beating, kicking, stabbing, &c. ...	28
Horses—Overdriving and overloading	4
Horses—Starving by withholding food	1
Donkeys—Working in an unfit state	7
Donkeys—Beating, kicking, stabbing, &c. ...	9
Cattle—Beating, kicking, stabbing, &c.	4
Cattle—Overstocking (distending udders) ...	2
Cattle—Cutting for identification	1
Cattle—Improperly killing	2
Sheep—Beating, kicking, stabbing, &c.	3
Pigs—Beating, kicking, stabbing, &c.	1
Dogs—Beating, kicking, stabbing, &c.	7
Dogs—Starving by withholding food	2
Cats—Setting dogs to worry	1
Cats—Cutting tails off	3
Fowls—Beating, kicking, stabbing, &c.	1
Fowls—Overcrowding in baskets	2
Fowls—Allowing to remain in toothed trap ...	1
Geese—Beating, kicking, stabbing, &c.	1
Pigeons—Improperly conveying	4
Hyenas—Burning during menagerie performances	1
Argali—Beating, kicking, stabbing, &c. ...	1
Various—Owners causing above offences ...	70
Total, during November, 1880	323

Twenty-three offenders were committed to prison (full costs paid by the Society), 300 offenders paid pecuniary penalties (penalties are not received by the Society); 50 convictions were obtained in Metropolitan Courts, and 273 in Provincial Courts.

JOHN COLAM, *Secretary.*

105 Jermyn Street, London.

SUBSCRIPTIONS and DONATIONS are URGENTLY NEEDED, the income having been seriously reduced by commercial depression. The public are therefore earnestly solicited to forward remittances, payable to the Secretary, to whom all letters should be addressed.

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EDITED BY DAVID THOMSON,

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AIDED BY A STAFF OF PRACTICAL GARDENERS.

The Number for March contains:—

The Rose-House—The Furnishing of Borders of Mixed Hardy Flowers—How to Make the most of Wall-Borders in Kitchen-Gardens: No. III.—Greenhouse Plants: No. II., Correas—Notes from the Papers—Hints for Amateurs—The Fruit Garden: No. III.—Notes on Decorative Greenhouse Plants—The Bedding-out System—Pleiones—Rose Notes for Amateurs—The Flower Garden—Botany for Gardeners: No. VI., Inflorescence, &c.—Solanum Capsicastrum—Pteris Umbrosa—Agapanthus Umbellatus—Royal Horticultural Society—Horticultural Exhibitions—Notice of Book—Dundee Horticultural Association—The Frost—Calendar: Forcing Department; Kitchen Garden.

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THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

[No. 96. Vol. VIII.] APRIL, 1881. [Published Monthly.]

Editorial, Notices, &c.

END OF VOL. VIII.

With this number will close the eighth volume of the *British Bee Journal*; and we cannot allow the occasion to pass without tendering our heartiest thanks to all friends for the cheerful and willing aid they have afforded us in our endeavour to make it a thorough exponent of the most advanced principles in bee-culture.

We have neither time nor space for reviewing the progress of bee-keeping since the *Journal* came into existence, but we look with pride at its condition now as compared with anterior times, and attribute no small share of the improvement to its teaching and influence. We have often to regret that its pages are not sufficiently elastic to enable us to publish as quickly as is desired all the contributions with which we are favoured, and we sincerely thank our contributors for their forbearance in that respect. During the past year we have added no less than 52 pages to the 192 of which the *Journal* is supposed to consist, at great cost to ourselves, and, we trust, satisfaction to our readers; but we have still on hand a large quantity of interesting matter in type.

It is the boast of the *Journal* that its pages are open for the free discussion of all matters pertaining to bee-culture, and it is our earnest wish that they may ever remain so; but we do not think it serves any good purpose to permit that freedom to trench on personality, and in future we shall excise all such matters, and prevent the necessity for replies that exclude subjects of more general interest. During the coming season there will be a great number of exhibitions; and while we hope to be enabled by the kindness of their secretaries to publish announcements and reports of all of them, we respectfully beg that they may be sent to us in condensed form, for the increased demands on our space render it too valuable to be taken up with ordinary newspaper 'padding.'

In conclusion, we would remind our readers that the time has arrived for the renewal of subscriptions, and we sincerely trust that they will respond to the suggestion implied as quickly as possible, that we may not be kept in doubt as to their intentions.

The addresses on the wrappers of those whose subscriptions have run out, will in future be written in red ink, a more gentle hint than a *coloured* wrapper, which often provokes impertinent observation; and one which we hope will be more effectual.

We are daily receiving such 'high praise' from our correspondents, and assurances that 'our' *Journal* is doing great and good service, that we make bold to ask every one of our subscribers to help to increase its circulation by obtaining a new subscriber, and sending the subscription with his own. We are willing workers, and have spent the best years of our life in promoting the interests of bee-culture, and shall probably die in harness; is it too much to ask for a little of the sympathy and encouragement that will make even a horse wear his trappings with glee, and spring to his work with renewed vigour and alacrity? —Ed. *B. B. J.*

APRIL.

Formation of an Irish Bee-keepers' Association.—The month of March, 1881, will be famous in the annals of bee-culture for having given birth to an Irish Bee-keepers' Association, the first fruit borne of the effort made by the British Bee-keepers' Association in August last to disseminate a better knowledge of bee-culture, and stir up a desire to participate in the pleasure and profit such knowledge is capable of producing. 'Three cheers! three times repeated, and one cheer more!' for the County Armagh, and the brave hearts in the van of progress who have initiated so grand a work in the interest of the whole nation. On another page will be found a short report of the proceedings on the eventful day—a red-letter day for Irish bee-keepers, and the Irish

Press is full of favourable notices of the movement. The meeting was announced to be held in the Town Commissioners Office, the Tontine Rooms, with the sanction of the Commissioners, at noon on Saturday, the 12th of March, 'For the purpose of organizing an Association to promote the intelligent, humane, and more profitable keeping of bees in the County Armagh;' and we would add, to set an example to all other counties in Ireland, by following which they may help themselves from within, to develope a source of wealth that lies at the very feet of the people, though at present unsuspected by the country at large. The Hon. Secs. are the Reverend H. W. Lett and G. Greer, Esq., both indefatigable in their exertions, and full of courage and determination, and we shall be glad to give them every possible aid in the voluntary and arduous duties they have undertaken.

March, true to its character, has been a month of many weathers, much of it of the unkindest, but bee-keepers will be grateful for the dry, fine, and sunny half-hours that gave the bees opportunity for flight, and the ingathering of such stimulating supplies as were naturally or artificially offered. On the 21st, when the sun 'crosses the line,' and the weather for the next six months is supposed by many to be portended by its then condition, the weather prophets in our locality were puzzled with its tangled condition; the morning was cloudy; about eleven o'clock the sun shone for a few minutes, and between that and one o'clock we had every sort of weather, with the exception of a thunderstorm. It rained, it hailed, it blew, it 'snew,' while now and then the sun shone gloriously; and in the later afternoon it became so fine that the bees became delightfully busy with the crocuses, the arabis, and the 'big sunflower' which contained the artificial pollen. Surely the weather-wise will not be far wrong if, after that, they prophesy that the weather in the future will be variable, and never to be depended on.

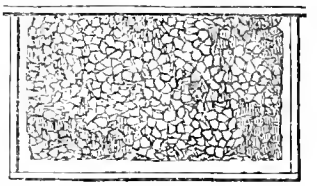
It will, perhaps, scarcely be believed, but the few fine days which occurred prior to the 20th made many of our over-anxious friends busy at work which should not have been undertaken until fully a month later, and 'transferring,' 'spreading the brood,' and 'queen-raising,' have occupied their minds most unhealthily for the bees whose signs of progress suggested the manipulations. Such operations, with the certainty of recurring bad weather, do far more harm than they can possibly do good; the first necessitates the production of wax and the performance of labour that is exhaustive to the bees, when they require careful nursing; the second, should a spell of cold ensue, will cause the bees to desert their brood, and cluster to promote heat for their own protection; and the third, by stopping the production of brood is surely mischievous, while the probability of raising queens that will be useful is most remote, seeing that drones will not come forth in chilly weather, and the queens through seeking them are liable to be lost, or by lapse of time become incapable of fertilisation.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

Preparation.—We often feel obliged to caution our readers against precipitancy in their bee management, but far oftener is it necessary to urge them to 'trim their lamps' and be ready for the work that is before them. Before the end of the present month the bees in many places will be ready for swarming, but how many of their owners have thought of the necessity of providing for them? That some have we know full well, and commend them for their foresight; but, as caterers for the public, we also know from past experience that a great number will put off preparation, and the busy time will arrive to find them 'bound in shallows, and in miseries.'

Beginners should purchase swarms, and fit up their hives with comb-foundation. This method will be far cheaper and safer than purchasing stocks, and risking the chance of damage in transit, and of disease.

Comb Foundation, except that with the wooden base, should be put into frames as indicated in wood-cut, *i. e.* fixed at top and hanging quarter of an inch clear of the sides and about three-quarters clear of the bottom. This will provide for any slight stretching that may take place, and will give the bees opportunity for building a little drone comb on the very place in the comb where it should be, viz. on the margin. There have been many plans devised for fixing foundation to top bars; but all appear to have objections. To be helpful, then, we would suggest that all top bars should be cut straight through the top, from end to end for preference, and the two halves fitted together and fixed with the sheet of foundation between them. A readier way, however, offers itself, viz. cutting the top bar nearly all along, and then half through. The front part will then pull open, and when the sheet has been put in its place, the screw should be turned home, and the work



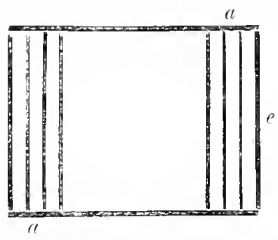
will be done. This will not appreciably weaken the top bar, the cut being so near the shoulder. There are several grades of foundation that will not bear to be used more than a few inches deep, and of these the bee-keeper must beware.

Too much Foundation.—In giving full sheets care should be taken not to give more than the bees can cluster in and cover on both sides. Small swarms would possibly only require three or four frames of Woodbury size, and that number should be shut off with a divider, because if the outer part of the cluster come on the inside only of the foundation, the weight of the bees will pull it out of perpendicular, and when they have built the cells on the inner side it will not come straight again, but will throw all beyond it out of order. When the inner combs are nearly finished, *i. e.* in twenty-four or thirty-six hours, an outside frame may be dropped into centre, or a new one may be given, the comb chamber being increased by moving the divider. Large swarms are equally liable to distort outer frames of foundation, if too many be given them. It is a capital plan to have the doubtful outside one of wooden based foundation, as that cannot bend by the weight of bees on one side only, and it will be highly useful as a divider.

The Quilt, and Feeding.—Many are puzzled how to feed through the quilt, and the devices resorted to would be amusing if recorded. We recommend that when the quilt is in position and feeding necessary, a small hole, say an inch and a half long should be clean cut out between two of the frames a little on one side of the centre of the hive, as in the diagram, and the feeding-stage placed over it. When the stage is not in use, the reversal of the upper layers of the quilt will cover the hole and keep the bees in confinement.

Queen Wasps.— These should be destroyed without mercy, to prevent the production of hordes of the insects later on.

Nucleus Hives.—A great deal of ingenuity and much money have been wasted in the production of nucleus hives with small frames to fit, after queen-raising is over, into larger hives, but the trouble and difficulty of management, together with the necessity for the possession and storage of a quantity of the small gear that can only be in use a part of the year, have induced the largest and most experienced bee-keepers of America to prefer narrow chambers in ordinary hives for queen-raising. These give all the facilities required. A Woodbury sized hive can be easily made to hold two nuclei, three frames of comb and bees being shut off from each other by dividers. The entrances could be made either at *a*, *a*, or *e*, *e*. A great advantage is that the bees of both can be easily joined to form one colony when queen-raising is over.



Weak Stocks and Ligurian Queens.—If a weak or queenless stock be discovered, do not send to the 'bee man,' whoever he may be, for a Ligurian or other costly queen in the belief that she will be able to raise the poor stock from its weak and perhaps moribund condition. The chances are that the bees of such stock will not accept an imposed queen, and the, almost, certainty is that she will not, in such weak stock, be able to display her fecund power. She would be like a general without an army, capable of a great deal, but unable to carry it into execution. To get the full value out of high-class queens, they should be united to strong stocks that can help them to carry out their superior powers. Almost any queen is good enough to offer to old queenless bees.

Avoid Transferring.—With comb foundation so cheap it will never pay to transfer good stocks of bees from hives in which they are prospering. We would prefer to let them swarm, and give the swarm a set of frames fitted with foundation, as per suggestion above. Twenty-one days afterwards, when all the worker brood will have hatched out and the young queen will have become fertile (all being well), a second swarm should be made, consisting of all the bees of the hive, and treated like the first one; the combs and honey being appropriated and used, or melted up. Should an after-swarm follow the first, as is usual about nine days after, it should be returned to the hive the same night, a measure that will generally stop further swarming.

Honey Jars.—We are still willing to take orders, for transmission to Birmingham, for the honey jars which by that means may be so cheaply obtained. They are of the pattern indicated in the woodcut, of pale green tinted glass (window glass) and the price at Birmingham is 15*s.* per gross for pound jars and 18*s.* for 2 lb. jars, and the cost of packing, including cask and hay, is 2*s.* and 2*s.* 6*d.* per gross respectively. There are no agencies and no store is kept. They are made by a working tradesman, and if wanted must be ordered early. We do not solicit orders for them, as they bear no profit, and we cannot be responsible for losses by

breakage or otherwise. They are sent from Birmingham at goods rates per railway.

Sun and Rain Screen for Skep Entrances.—A piece of tin or zinc, cut as indicated, pressed into the front of the hive and bent downwards will form an excellent screen for skep entrances. An American meat or canned fruit tin could be used for the purpose.

BRITISH BEE-KEEPERS' ASSOCIATION.

(*Continued from page* 213.)

Discussion on Mr. Lyon's Paper.

The Right Rev. Chairman said he had very little experience, since he kept bees, of bar-frame hives. As chairman of the meeting, he must express his thanks to Mr. Lyon for the amazingly clear way in which he had put his theory before them. If he might compare two efforts with the same end and object, he should compare that which fell perfectly still-born on the bee-keepers of the country, in the shape of two little pamphlets by Mr. Cotton, but the mode adopted by Mr. Lyon seemed to be as much the right way as Mr. Cotton's was in the wrong way. The thing they had to consider was how they could best photograph what they had heard, and bring it before the intelligence of the labouring classes, whom they wanted to influence in this matter.

Mr. Cheshire, who rose to the call of the Chairman, said that he thought Mr. Lyon had worked out his hive with the materials to which he had limited himself with a good deal of ingenuity, and that nothing seemed to remain to be suggested which would not add to the cost. If he said anything which would tend to show that the hive under discussion was not perfect, he must not be understood to be detracting from the value of the good work Mr. Lyon had in hand. Yet with the expenditure of very little more money the hive might be made much more serviceable, especially for winter, than in its present form; but before explaining how, he would refer to one or two points occurring incidentally in the paper read. Mr. Lyon had spoken disparagingly of distance-tacks, but he ventured to predict that they would hold their own very much longer than the broad-shouldered frames, which were unconquerably inconvenient in several directions, always getting fixed, and only removable by a wrench most irritating to the bees, while the more usual form of frame on a metal runner admitted of slipping backwards and forwards, half-a-dozen at a time, in the readiest manner. [Mr. Hooker: These broad-shoulders are always shrinking and swelling, and so are always either too tight or too loose.] The question also has been raised whether pitch used for waterproofing would be a success, but he could assure Mr. Lyon that the plan he had devised and first suggested in *Practical Bee-keeping*, seven years before, had been most serviceable to cottagers, as he had often been able to notice. It was only necessary to cover roughly with pitch the wooden article to be waterproofed, and then spread paper over it. The outside of the paper was now pressed down with a heated flat-iron. The running pitch settled into all cracks, and soaked the paper, preventing the weather from afterwards affecting it, and preserving it for years. Mr. Cheshire said that the main objection he should make to Mr. Lyon's hive was the thinness of its walls. Nothing was really more essential than high non-conductivity, and many so-called cheap hives, through failing here, had much to answer for. He had lately had a correspondence with a gentleman of the sister island upon this very point, and the result had been a determination on his (Mr. Cheshire's) part to put the whole thing to the test of experiment, the results of which he now presented to the Meeting.

Mr. Cheshire illustrated his remarks with a number of boxes of different makes. He said, 'I have here a number of tin chambers all capable of holding twelve ounces of water. I placed these in the several boxes before us after filling them with water at 200°, and exposed them under equal conditions, and noting carefully the times occupied in each case by the water in falling through a certain number of degrees of temperature. This very delicate thermometer was used, and the calculations were made according to "Newton's law of cooling," which, applied to our purpose, is in effect that temperature changes in direct proportion to the difference between the temperature of the body under experiment and the surrounding air. I found that if the non-conductivity of the single hive side of $\frac{5}{8}$-in. pine be represented by 1, that of the double side as we have in this second box, with one inch of dead-air, would be represented by 4. I now proceeded to compare this dead-air space with the same space packed with chaff, and found that this in preventing loss of heat was twice and a half as effective as dead-air, or, in other words, that its non-conductivity should be represented by 10. I had foreseen the superiority of the chaff to the air-space, but was not prepared for so great a difference. It has been argued air is a better non-conductor than any solid substance, therefore it is better than any form of packing, but the fallacy lies in this, that the so-called *dead*-air is not dead, but circulating. It rises against the inner skin of the hive, and falls where it touches the outer, and so is ever acting as a distributor of heat. In the same way a man in bed might argue that the air is a better non-conductor than the bed-clothes, therefore he would say, I shall be warmer without them, but universal experience contradicts the supposition. The bed-clothes are useful because they prevent the circulation of air, and that next the body being warmed is imprisoned instead of passing away for cold to take its place.

'The advantage of a non-conductive packing being proved I now asked whether chaff was the best material at command for this purpose, and cork-dust as used for packing Spanish grapes at once occurred to me as a waste product to be had generally for the asking; and trying this I found that it was much more effective than chaff, giving me a non-conductivity of 14 instead of 10. I had now a hive-side $3\frac{1}{2}$ times as good as the air-space and double skin of wood, and which has for the cottager and amateur this great advantage, that while accurate carpentry is needed to secure dead (?) air, the cork packing makes the air practically dead, even if the wood-joints be most defective in their fit. The cottager, with very little trouble, could convert the hive, as shown by Mr. Lyon, into a cork-packed one, thus he would secure a second box so much larger than the one used for the hive-body that the latter would go into it with a space of an inch or so between them. He would complete his hive, but omit the alighting-board, and now putting the former into position, would make a little wooden bridge, which would act as a tunnel, permitting the bees to pass from the inner box through the outer one into the air. Cork-dust would now be somewhat tightly packed between them, and covered above by wooden slips, when the cottager would possess a hive superior for wintering to the most costly ones now in common use. The bottom would be a fixture, but this would be no disadvantage in such a hive as it would then be.

'With hive sides made as described, small lots of bees may be wintered with success, almost incredible to those using thin hives only. A tea-cup full of bees placed on two frames in a twin hive 3 in. thick, and chaff-packed, has gone on well since the end of October till now, the queen breeding continually on the frame against the division-board. Five other nuclei I have similarly wintered with no casualty. In thin hives the sides are too

cold to permit the bees to touch them in hard weather, so that they are driven to remaining in the middle of their frames exposed on all sides, while they often are lost in detachments because they cannot get from comb to comb, but in these they winter by preference against the hive wall, and are thus only exposed on one side. while they close the frame ends for themselves, and can pass always freely from comb to comb without a possibility of getting separated from one another. The advantage may be seen at once by stating that a thin wall would pass as much heat through it in a week as the cork-packed one would in three months, and that if we take the heat of the cluster as 65° Fahrenheit, a little calculation based upon Newton's law (which, though lately proved not absolutely accurate for extreme temperatures, is sufficiently so for such as those with which we have to do), we shall find that my hive-side will be as bearable to the bees with an external temperature of 20°, as that of 1-inch pine would be with the outside air at 59°.' Mr. Cheshire added, 'I have not made any experiments in reference to straw. These experiments of course involve cost, but I nevertheless intend not to leave straw untried.'

Mr. T. W. Cowan said they were all indebted to Mr. Lyon for bringing the subject of cheap hives before them in such an interesting manner, more particularly as their object was to teach cottagers to keep bees on the most improved system. He questioned whether they were really doing good in giving them such a very cheap hive as the one shown. With an amateur or expert it would do, but cottagers required something more substantial. One of the objections he had to the hive shown was the thinness of its sides: but this was an evil that could be got over by having an outer casing, and adopting one of the methods of packing just alluded to by Mr. Cheshire. He was much interested in the dexterous way in which Mr. Lyon manufactured these frames, but he was afraid the ingenuity displayed was more than the average cottager in England could be accredited with. If the Association desired to do good in this matter, it would be well of them to carry out Mr. Lyon's suggestion,—get the frames made accurately by a manufacturer, and supply them to cottagers at a cheap rate. All bee-keepers had their crotchets; some preferred distance-pins, others broad shoulders, his crotchet was to have nothing of the kind, and to adjust the frames by the touch and the eye. Any one who had practised a little would be able to do just as well without distance-tacks. The objection he had to broad-shouldered frames was the propolisation, and not being able to vary the distance between the frames when necessary. He did not object to the size of frame, but should prefer to see them much longer than they were in the specimen hive; the reason being, that the queen was inclined to spread out her brood on one frame in early spring more rapidly than she would if she had to move from one frame to another; therefore, he preferred the longer frames, and the depth might be with advantage a little less than those shown by Mr. Lyon. Beyond these objections, which are all easily remedied, he had little to say against the hive except that he had noticed the entrance to the specimen one was only three inches long, and three-eighths of an inch in depth. In hives of the same capacity he had eight-inch openings; and even these, if the weather was very hot and the hive crowded, he had found hardly sufficient, and had raised the hives to increase the opening. He was afraid so small an opening would inconvenience the bees if much crowded.

Mr. Cheshire: My hives have eight-inch openings.

Mr. Cowan said, now that he had disposed of Mr. Lyon's hive, he should like to say a few words upon what Mr. Cheshire had been speaking about, and he was sure the Association's thanks were due to that gentleman for his experiments. For the last two years he had been making experiments with chaff-hives, although he had not carried them out to the extent Mr. Cheshire had. He had found bees winter infinitely better in chaff-hives than they did in hives with dead-air space. He reduced all his hives to six frames for wintering; and this year had tried, by way of experiment, wintering one lot on two frames only, with perfect success. He had a hive of two frames on which the queen had been breeding all through the winter. He did not think she had ceased at all, but of course there was a very small amount of brood. This hive had been fed with pea-flour candy, and the bees had had nothing but this to live upon all the winter; notwithstanding which they were no less in number than before. With regard to the snow, he found on the 18th January some of his hives covered with drifted snow to a depth of six feet; he had heard that many bee-keepers removed the snow, but he did not do so, and the bees did not suffer any inconvenience. His reason for adopting this course was, that when in Russia he had noticed the hives were sometimes covered to a depth of eight or nine feet, but the bees were never disturbed, and the losses were few. As soon as the late severe frost broke up, he examined his hives, and was pleased to say that not one of them had suffered from the severe weather. So that chaff-hives certainly had an advantage over other hives filled with dead-air space.

The Rev. G. Raynor said his hives, occupying a very exposed position, were nearly filled with snow on the 18th of January, but he succeeded in transferring them to other hives with very little loss. The hive shown by Mr. Lyon was just the kind of thing they should introduce to the cottager. In the course of Mr. Cheshire's remarks it occurred to him whether it was really advisable to keep bees so much warmer in the winter months, and whether it would not encourage breeding at a time when the queen required rest. The advanced American bee-keepers all appeared to approve of the chaff-hives, but it had occurred to him whether the advantage was as great as would appear at first sight.

Mr. Baldwin asked if it would not be an improvement to Mr. Lyon's hive to have the floor-board protected, in order to prevent the water drawing under. This could be done by making plinths, and carrying them round the bottom of the hive. He had been rather amused with Mr. Lyon's ingenuity, but he believed it was pretty well conceded that distance-tacks were much better than the wide shoulders.

Mr. Cowan said, with regard to the advisability of keeping bees at a high temperature in the winter, he might say that, if we did not do so, the bees would try and do it themselves. The object was to let the bees remain as quiet as possible at such times, and then they would consume less food than if they were obliged to exert themselves to maintain the necessary heat of the hive. The temperature of a cluster of bees in winter was about 65 degrees. Another of his crotchets was with regard to queen-bees: he preferred young prolific ones, and replaced all his old ones by such at the end of the second season. With our forcing system of breeding, he considered queens were at their best, or, as the farmers say, in 'full profit,' in the second year, after which time he got rid of them as their breeding powers decreased. He thought if queens were breeding all the winter to any great extent, their egg-laying powers might be exhausted before the end of the second season.

Mr. Baldwin considered there was not sufficient ventilation in the top of Mr. Lyon's hive.

Mr. Cheshire argued that there was no fear of bees becoming too warm. They regulated their temperature by their breathing through their spiracles, and the more heat they had to provide the more they were exhausted. They became quiescent if little heat was demanded of them, but intense cold, if they were imperfectly defended, caused them heavy exertion and great exhaustion. Hybernation would explain the matter. Bats in cluster during the winter in ordinary low temperatures breathe

but very little, and consume the store of material within them but very slowly; and as the temperature falls they become more and more dormant up to a certain point, but this being passed, dormancy would soon lead to death, and then the increased cold renders them more active. The breathing is quickened, and the store within more quickly oxidised in order that temperature sufficient to maintain vitality may be preserved. In like manner with bees, apart from the exhaustion incident to the feeding of brood, the measure of heat necessary to be produced is the measure of wear and the measure of the consumption of store likewise.

Mr. Martin, a cottager, said he had adopted chaff-hives for some time with considerable success.

Mr. Lyon then replied: With regard to distance-tacks, he was sorry he had trodden on a favourite corn of Mr. Cheshire's; but he was simply advocating wide shoulder-frames in contradistinction to the distance-tacks. He had carefully avoided recommending any kind of waterproofing, because he thought that pitch run in hot weather, but he was glad to have learned that it did not. Concerning the propolisation of these frames, he used black-lead and tallow to prevent it; and as to the size of the frames, they could easily be increased by placing them lengthwise over the box. In answer to Mr. Baldwin, he might say that he had several of these hives in use, and practically the wet did not come in, but the ventilation at the top of the hive might be improved by the insertion of a small piece of perforated zinc in the lid.

The discussion then concluded by a vote of thanks to Mr. Lyon for his paper; by the Rev. G. Raynor to Mr. Cheshire for the experiments, which he remarked would he felt sure bear fruit in other countries as well as their own; and to the Chairman for his conduct in the chair.

BRITISH BEE-KEEPERS' ASSOCIATION.

The monthly meeting of the Committee was held at 105 Jermyn Street, on Wednesday, March 9th. Present, Mr. T. W. Cowan in the chair, Rev. E. Bartrum, Rev. G. Raynor, Dr. Lionel S. Beale, J. M. Hooker, F. Cheshire, H. Jonas, E. S. Wheeler, W. O'B. Glennie (treasurer), and the assistant secretary. The minutes of the last committee meeting having been read, confirmed, and signed, the Assistant Secretary reported, on behalf of the hon. secretary, that Mr. C. N. Abbott had promised to read a paper at the next quarterly conversazione, subject, 'The Hive for the Advancing Bee-Keeper.' It was resolved that the next quarterly meeting should take place on Wednesday, April 6th, at 446 Strand (opposite Charing Cross Railway Station). Quinby's *New Bee-Keeping* having been presented to the library by Mr. John Y. Detwiler, of Toledo, Ohio, U.S.A., through the Editor of the *British Bee Journal*, it was resolved, 'That the best thanks of the Association be given to Mr. Detwiler for his valuable gift.'

It was resolved that the name of the chairman be added to the Sub-committee appointed to make the necessary arrangements for the formation of the collections of hives, &c., at South Kensington. It was also resolved that the librarian be empowered to purchase various periodicals, viz., *The British Bee Journal*, *The American Bee Journal*, *Gleanings in Bee Culture*, and the *Bienenzuchter*, and that the same be bound and added to the library at the end of the year.

The Prize Schedule, as published in our columns, for the forthcoming show at South Kensington, was arranged. The balance-sheet for the month ending February 28th, showed a balance in hand of 18*l.* 14*s.* 8*d.*, having been read, the meeting terminated, the Committee having sat three hours and a half.

The Hon. Secretary has received numerous communications respecting Mr. Lyon's paper, read at the last quarterly conversazione, more especially in reference to where the 'pine-boards' could be purchased at the price named by Mr. Lyon. Mr. Lyon writes as follows:—'The pieces of board used at the conversazione were purchased at Mr. Burrows' Timber Yard, Camberwell Green. In the neighbourhood of Hackney and Bethnal Green, where cheap furniture is made, pine plank, 11 inches wide, is quoted at 2*s.* 9*d.* per 12 feet at almost every yard. Upon inquiry, I find this to be rough stuff; but at 4*s.* very fair quality may be purchased. Each cut costs 2½*d.*, so that five cut costs 10*d.* the board.'

Particulars relating to the South Kensington Show and for prizes offered for collections of bee furniture at the Royal Agricultural Show will be found upon reference to our advertising columns.

We regret exceedingly that by inadvertence the name of the Rev. Robert Stanley was omitted from our Report of the February meeting of the above Association, he having attended as a representative of the Herts County Association.—Ed. *B. B. J.*

CALEDONIAN APIARIAN SOCIETY.

The first quarterly meeting of the seventh session was held in M'Innes' Temperance Hotel, Gordon Street, on Wednesday, the 16th March. Present: Rev. J. Irving; Messrs. Sword, Wood, Cameron, Thomson, Johnstone, Hutcheson, and Bennett. The Secretary read the intimation calling the meeting, and regretted that of the seventy members to whom postcards had been sent so few had put in an appearance. On the motion of Mr. Wood, the Rev. Mr. Irving was called to the chair.

The minutes of last meeting were read and confirmed, after which a letter of apology from Mr. Young was read. On the motion of Mr. Hutcheson, seconded by Mr. Johnston, John M. Martin, Esq., of Bloomhill, Cardross, was elected president for 1881. Messrs. Cameron and Wood were elected members of committee.

Mr. Bennett reported that he had seen Mr. Menzies regarding the Stirling Show, and that the usual grant of 20*l.* and two medals would be given by the Highland and Agricultural Society, also 5*l.* would be offered by the Highland and Agricultural Society for the best essay on 'Bee Culture adapted to Scotland,' particulars of which would be given on an early date. A committee was appointed to draw up a prize schedule for the Stirling Show. Mr. Bennett said he was much indebted to Mr. Peel for his kindness in replying to all his questions, and also for the proof-sheet of the prize schedule he had sent.

The Rev. Mr. Irving kindly consented to deliver a lecture on 'Bee Culture,' in Stirling, on 29th April.

On the motion of Mr. Sword, a vote of thanks was given to the chairman.

WARWICKSHIRE BEE-KEEPERS' ASSOCIATION.

This Association, in connexion with the British Bee-keepers' Association, was instituted September, 1879. President: Right Hon. Lord Leigh. Vice-Presidents: The Lord Bishop of Worcester, the Earl of Bradford, the Earl of Denbigh, Lord Dartmouth, Lord Newport, Lord Windsor, W. S. Dugdale, Esq. Provisional Committee: Chairman, Rev. Canon Evans; Rev. K. R. Bedford, Mr. William Beech, Mr. V. Blackmore, Rev. J. Christopherson, Mr. Charles Couchman, Mr. T. Cox, Mr. A. Charles, Capt. Deykin, Mr. A. Hodgson, J.P.; Rev. R. W. Johnson, Rev. O. Mordaunt, Mr. H. Mapplebeck, Mr. Morley, Mr. F. W. Nash, Mr. E. M. Pearson, Mr. J. Pumphrey, Rev. L. T. Rendell, Rev. A. H. M. Russell, Rev. J. E. Sale, Rev. J. Short, Mr. Alfred Sale, Mr. W. Southall, Mr. H. Spencer, Mr. E. Stanbury, Mr. J. P. Turner, Mr. John Walton. Hon. Treasurer: Mr.

James Leigh, General Manager, Birmingham Banking Company (Limited), Birmingham. Hon. Secretary: Mr. James Noble Bower, Knowle, Warwickshire.

The Annual Meeting was held on March 10th at the Grand Hotel, Birmingham, the Rev. Canon Evans presiding, in the absence of Lord Leigh. There was a good attendance.

The report, read by the Hon. Secretary, stated that during the past year much progress had been made in the advancement of apiculture in Warwickshire by means of this Association. Its chief objects were the advocating of a more humane and intelligent treatment of the honey-bee, and the improvement of the condition of agricultural and labouring cottagers. There were in all eighty-five members, with every prospect of increase during the ensuing season. The Association now possessed a tent, which had been in great demand at various horticultural shows, which had been attended by experts, who imparted much practical knowledge on the improved methods of bee-keeping. The following places had been visited:—Sutton Coldfield, Kenilworth, Tachbrook, Ragley Park, Hewell Park, Knowle, Hall Green, Bromsgrove, and Leamington. The County Show was held at Leamington, September 7 and 8, in conjunction with the Warwickshire Agricultural Show. The weather being fine, a very large number of people attended the manipulations in the tent. Many members of the Association were present, and kindly assisted in explaining and answering numerous questions. The financial statement showed that the expenditure of the past year had been 111*l.* 8*s.* 10*d.*, and that owing to the exceptional expenditure in the purchase of a tent there was a balance owing to the treasurer of 12*l.* 9*s.* 6*d.*

The Chairman, in moving the adoption of the report, said it was not two years since the Association was launched, but it appeared already to have achieved considerable success. The proceeds of exhibitions during the past year had amounted to 62*l.* 12*s.* 4*d.*, and he thought they need have no misgiving as to the financial position of the Association. He had no doubt that with sunnier skies, provided that they could get skilful experts to exhibit the manipulation of bees, the exhibitions connected with the Society would produce a sum sufficient to cover all demands upon it. It was very gratifying to hear, as he had done incidentally, that apiculture was making progress amongst the labouring class, for whose benefit those who promoted the Association felt most keenly. He had heard in many quarters of labouring men taking great interest in the keeping of bees. He did not think it was well to dwell too much upon the profitable side of such an occupation, because they might in some cases be raising hopes which might not be realised; but the occupation itself was most valuable in giving those who took part in it a subject of higher interest than their every-day avocations, and in keeping them away from dangerous temptations and associations.

Mr. Pumphrey seconded the adoption of the report, and expressed his opinion that the Association gave promise of much usefulness.

Mr. J. Morley suggested that if they could start a Bee Farm in connexion with the Association, people would be more ready to go to it for information than to private keepers.

Mr. Bower said the suggestion was a good one, and might possibly be carried out when the Association grew stronger, and possessed the necessary funds.

The report was adopted.

A ballot afterwards took place for a bee-hive, the winner being Mr. Forsey, of Atherstone. Votes of thanks were then passed, and officers were appointed for the ensuing year. The meeting closed with a vote of thanks to the Chairman.

We are glad to be able to announce that the sum due to the Treasurer was quickly subscribed after the meeting, and the Association has now a fair balance-sheet, with valuable 'assets' in hand.

BERKS AND BUCKS COUNTY ASSOCIATION.

We have been favoured with the report and balance-sheet of this promising Association. Established in 1879 under Royal patronage it made good headway, and last year an exceedingly well-managed and interesting exhibition was held in the Home Park, Windsor, which resulted in a balance of 1*l.* 6*s.* 10*d.* The general account is still more favourable, 5*l.* 13*s.* 4*d.* showing on the right side. At the end of the year there were sixty-six members, of whom Messrs. W. T. Darby, St. Stephen's Villas, Clewer: and G. P. Cartland, of Victoria Street, Windsor, are the Hon. Secs.; and the Rev. S. R. Wilkinson, of Great Marlow; Mr. W. Carter, of Maidenhead; and Mr. John Filbee, of High Wycombe, are corresponding members; and either of them will be glad to receive the names of others wishing to join the Association, which is affiliated to the British Bee keepers' Association.

The Committee are most anxious to encourage local shows in the distant parts of the counties, and will be glad to co-operate with gentlemen willing to act as local Hon. Secs. or with Secretaries of Horticultural Associations with that object. The Association deserves, and, we are assured, will achieve great success.

HERTFORDSHIRE BEE-KEEPERS' ASSOCIATION.

The annual show of this Association will take place at St. Albans during the second week in August, and will be held in connexion with a large County Flower and Fruit Show. The Committee have made arrangements for their expert to visit every member of the Association during the present spring, for the purpose of giving them advice in the management of their bees. The expert is allowed to devote one hour to each member if required; all extra time, beyond the stated time of one hour, to be paid for at the rate of 2*s.* 6*d.* per hour. The Association now numbers 300 members.

COUNTY ARMAGH BEE-KEEPERS' ASSOCIATION, IRELAND.

The meeting for the purpose of founding a bee-keepers' association for the County Armagh was held on Saturday, the 12th ult., and was quite successful. Sir Wm. Verner, who it was hoped would preside, was obliged, owing to his duties as High Sheriff, to send an apology at the last moment, and the chair was accordingly taken by Mr. R. J. M'Crumm. Letters were read from Mr. J. N. Richardson and Mr. Maxwell C. Close, the County members, expressing their warm approval of the movement—the former promising a subscription of 5*l.* It was then proposed by Mr. George Greer, and seconded by the Rev. H. W. Lett, 'That an association be formed, to be called the County Armagh Bee-keepers' Association, for the purpose of encouraging the intelligent, humane, and more profitable keeping of bees.' It was then proposed by Mr. M'Caughy, seconded by Dr. Lynn, and resolved, 'That the Association consist of members and associates: the annual subscription for members to be one shilling, and that for associates not less than five shillings.'

The following were appointed officers for the current year: Patron—the Right Hon. Lord Lurgan, K.P. President—The Baroness Von Steiglitz. Vice-Presidents—Sir Wm. Verner, James N. Richardson, Esq., M.P., Maxwell C. Close, Esq., M.D., Major Stewart Blacker, and John Hancock, Esq. Committee—Mr. Allen, James Ussher, Esq., Dr. Lynn, Mr. Thomas Best, and G. Hazlett, Esq., with power to add to their number. Hon. Treasurer—T. G. Peel, Esq., and Hon. Secretaries—G. Greer, Esq., and the Rev. H. W. Lett.

The idea has been warmly taken up, and the Association continues to increase in numbers. The meeting was very fully reported in the local and provincial papers.

BEE-KEEPERS' ASSOCIATION FOR FORFAR, N.B.

An association has been formed for Forfar, and an exhibition of bees, hives, honey, and manipulation, will take place on 26th and 27th August next, when numerous money prizes will be awarded. Mr. J. Saddler, of High Street, is the hon. sec.

BEE-KEEPING AT BUXTON.

On the 21st of February the Rev. H. M. Stallybrass delivered a lecture on 'Bees and Modern Bee Culture,' in the new Congregational School Room, Hardwick Square, Buxton. The chair was taken by the Rev. J. Blore. There was a good attendance. The audience seemed interested, and many remained after the lecture to examine the appliances, and the new diagrams of the British Bee-keepers' Society. A collection was made at the close of the lecture on behalf of the School Building Fund.

A CONTRIBUTION TO THE PHYSIOLOGY OF THE BEE. By Dr. Dönhoff.

(*Continued from p.* 217.)

4.—Every Bee an Individual chemically unique.

Every man is characterised by a different odour; the dog discovers the track of his master out of a thousand: he scents, as experiments have taught me, his master at a hundred paces. Every bee, too, appears to give forth a scent which is different from the scent of every other bee. I caught the queens out of a second swarm, placed every one in a different queen-cage, and hung up every one of these on a different tree in the garden. The swarm, after it had flown about for a time, collected around one of the cages. The bees did not trouble themselves about the other cages; only once did I see a bee on one of them, and it was just as quickly away again. I now placed the cage, about which the swarm had collected, in the house. After some time the swarm flew away, and after it had flown about in the air for a while it returned again into the hive, without a single bee troubling itself about the queens. The queen, about which the bees had collected, was manifestly the one that had been free in the hive. It might now be concluded she had acquired the scent of the hive, and on that account the bees distinguished her. But the air of the hive penetrates into the queen-cells (for otherwise the queens would die) just as well as an exchange of air is effected through the calcareous shell of an egg. Therefore, the queens, which till then had been shut in, must have acquired the air of the hive, especially since air penetrates besides through the feeding-hole. I can only think that every queen originally smells differently.

The different odour of every man depends, indeed, on this, that the quantitative proportion of volatile products, as butyric acid, acetic acid, formic acid, is a different one; as indeed the proportion of the elements of milk is a different one in every cow, and with the bees there will be similar conditions. If every queen has a specific odour there is ground for assuming that every worker and every drone has a different odour.

5.—Comb Construction an Argument against Darwinism.

The form of the comb construction is absolutely perfect — that is, the form is of that kind, that the proportion of capacity to surfaces is a larger one than with any other conceivable form, so that the smallest quantity of wax is necessary for construction. This form is a circular outline for the isolated construction of the queen-cell, and a six-sided prism for the combined construction and the large angle of the bottom trapezium 109° 28½′.

According to Darwin, the bee has originated gradually from other species. The primitive ancestors were other animals, which did not build. Then there arose accidentally an animal which built, other successors built more suitably, on which the first succumbed in the struggle for existence, but the last survived. In this way there came bees that ever built more perfectly, until at last our bee was produced. Since the bees have not existed from eternity, there could only be a limited number of species of bees, there could only have arisen a limited number of methods of construction. I will just assume that a trillion species of bees had arisen, and a trillion methods of construction. The number of possible methods of construction is infinite; the probability that a bee should build on the absolutely perfect method of construction of our bee is $\frac{1 \text{ Trillion}}{\text{Infinity}}$, that is, it is equal to nothing. If 100,000 lots are in a lottery, and I take a lot, the probability that I win the big prize is $\frac{1}{100{,}000}$. The probability of the assumption of Darwin is infinitely small; it is equal to nothing. The comb construction of our bee puts to shame all attempts to explain the adaptation in nature by accidents; it gives us presage of a higher Power before whom all problems of mathematics and of nature are solved.

MEAD WINE.

There are different kinds of this wine; but those generally made are two, namely, sack-mead and cowslip-mead. Sack-mead is made thus:—To every gallon of water put four pounds of honey and boil it three-quarters of an hour, taking care properly to skim it. To each gallon add half an ounce of hops, then boil it half an hour, and let it stand till the next day. Then put it into your cask; and to thirteen gallons of the liquor add a quart of brandy or sack. Let it be tightly closed till the fermentation is over, and then stop it up very close. If you make as much as fills a large cask, you must not bottle it off till it has stood a year.

To make cowslip-mead, you must proceed thus:—Put thirty pounds of honey into fifteen gallons of water, and boil it till one gallon is wasted; skim it, take it off the fire, and have ready sixteen lemons, cut in half. Take a gallon of the liquor and put it to the lemons. Pour the rest of the liquor into a tub with seven pecks of cowslips, and let them stand all night; then put in the liquor with the lemons, eight spoonfuls of new yeast, and a handful of sweet-briar. Stir all well together and let it work three or four days. Then strain it, pour it into your cask, let it stand six months, and then bottle off for use.

It has been the peculiar study of the writer of this

work to render it the most perfect, and consequently the most useful composition of the kind hitherto formed. To effect this he has endeavoured to enlarge and improve his own knowledge from that of others in the various subjects contained in this work; and from his extensive connexions has met with many favourable opportunities of gratifying his wishes. One instance, among the rest, is in the article now before us, which was obtained from a lady in the country, who has always been particularly attached to mead wine, and whose manner of making we shall give in her own words, as sent by post in the month of January last:—

'To 120 gallons of pure water, the softer the better, I put fifteen gallons of clarified honey. When the honey is well mixed with the water I fill my copper, the same as I use for brewing, which only holds sixty gallons, and boil it till it is reduced a fourth part. I then draw it off and boil the remainder in the same manner. When this last is about a fourth part wasted, I fill up the copper with some of that which was first boiled, and continue boiling it and filling it up till the copper contains the whole of the liquor, by which time it will, of course, be half evaporated. I must observe, that in boiling I never take off the scum, but, on the contrary, have it well mixed with the liquor whilst boiling by means of a jet. When this is done, I draw it off into underbacks, by a cock at the bottom of the copper, in which I let it remain till it is only as warm as new milk. At this time I turn it up, and suffer it to ferment in the vessel, where it will form a thick head. As soon as it is done working, I stop it up very close, in order to keep the air from it as much as possible. I keep this, as well as my mead, in a cellar or vault I have for the purpose, being very deep and cool, and the door shut so close as to keep out in a manner all the outward air, so that the liquor is always in the same temperature, being not at all affected by the change of weather. To this I attribute, in a great measure, the goodness of my mead. Another proportion I have of making mead is to allow eighty pounds of purified honey to 120 gallons of soft water, which I manage in the making in all respects like the before-mentioned, and it proves very pleasant, good, light drinking, and is by many preferred to the other, which is much richer and has a fuller flavour; but at the same time it is more inebriating, and apt to make the head ache if drunken in too large quantities. I imagine, therefore, upon the whole, the last to be the proportion, that makes the wholesomest liquor for common drink, the other being rather, when properly preserved, a rich cordial, something like fine old Malaga, which, when in perfection, is justly esteemed the belt of the Spanish wines. I choose, in general, to have the liquor pure and genuine, though many like it best when it has an aromatic flavour, and for this purpose they mix elder, rosemary, and marjoram flowers with it; and also use cinnamon, cloves, ginger, and cardamums in various proportions, according to their taste. But I do not approve of this last practice at all, as green herbs are apt to make mead drink flat; and too many cloves, besides being predominant in the taste, make it too high a colour. I never bottle my mead before it is half-a-year old, and when I do I take care to have it well corked and keep it in the same vault wherein it stood whilst in the cask.'

Saragossa Wine, or English Sack:—To every quart of water put a sprig of rue, and to every gallon put a handful of fennel roots. Boil these half-an-hour, then strain, and to every gallon of liquor put three pounds of honey. Boil it two hours, and skim it well. When it is cold, pour it off, and turn it into a cask or vessel that will just hold it. Keep it twelve months and then bottle it off.—From *The Housekeeper's Instructor*, by W. A. Henderson. Corrected by Jacob Christopher Schnebbelie, late apprentice to Messrs. Tupp and Perry, Oxford Street; afterwards principal cook at Mehon's Hotel, Bath, and now of the Albany. London, 1805.

SHOWS AND BEE TENT ENGAGEMENTS IN 1881.

May 25 & 26.—Oxfordshire Agricultural Show at Thame.

July 13–18.—Royal Agricultural Show at Derby.

July 26–August 1.—Annual Show B. B. K. A., South Kensington.

August 18.—Berks and Bucks B. K. A. at Maidenhead.

August 30.—Horticultural Show at Long Buckby.

Correspondence.

IRISH ASSOCIATION.—IVY HONEY.—STANDARD FRAME FOR IRELAND.

Believing the suggestion of Mr. Aldridge in last number of *Journal* to be an admirable one, namely, that members of the Irish Association should try to influence others to join, I have been endeavouring to carry it out in my own case, not quite unsuccessfully I am glad to say. Two friends have promised to join the Association, a third has given a half promise, while I hope to obtain the consent of a few more very shortly.

How is one to account for the presence of crystallised honey in combs of a strong stock early last autumn? These combs being examined a few weeks ago, some of the honey, even in the same comb, was found to be candied and some not. Would this point to a difference in the honey, or does all good honey, not covered by the bees, crystallise and then liquefy again according as the bees cover it? Much of this honey was obtained from ivy, and perhaps that might have any thing to do with it. Perhaps you would kindly refer to the subject in next *Journal*. I should also be much obliged if you would be good enough to give in next number (April) the *exact* outside dimensions of standard Woodbury frame, if there *is* a standard. Hitherto I have used a somewhat small frame, but, recognising the wisdom of having some standard frame (as recommended by you in a late number of *Journal*) and believing the Woodbury to be the most suitable size for this country, I have determined to have all my frames of that size in future. Hence my anxiety for exact dimensions.—R. Smyth, *Westmeath*.

[Hurrah! for the Association. It will prosper in such willing hands, and the example will surely be followed. Ivy honey candies, as heather congeals, almost immediately after it is gathered, facts that seem to imply a wise arrangement in respect of bees, for if their late-gathered stores continued watery, and incapable of being sealed, the bees would quickly become diseased. Early honey remains watery, and bees while breeding require an abundance of water. Late honey dries up almost instantly, when water in the hive would be injurious; what a beautiful 'fitness' in things! These facts have been remarked on several times in *Journal*, since attention was called to ivy honey by an Irish correspondent in 1874, p. 140, vol. ii. of *Journal*. A Woodbury hive is 14½ inches square and 8¾ inches deep, and the frame should be even with the top, ¼ inch from each side (or end), and (properly) ¼ inch from the bottom board, but we advise about ⅜ths, to allow for shrinkage in the hive walls, which would practically reduce the depth. There are those who still insist on a ⅜th space above the frames, created by sinking the frame ends into rabbets in the hive walls, a practice that necessarily reduces the size of the frames. Now that Ireland has awakened to the importance of bee

culture we would most earnestly advise the adoption by the Association of a standard frame, and that they should recognise no other. We urged this measure in England years ago without effect, and the result justifies our foresight and opinion; for this country is swamped with frames of whimsical variety; but with only just sufficient difference in their dimensions to render them non-interchangeable. If associations would agree to adopt one standard, and offer prizes for hives containing that size only, uniformity would soon be brought about, and judges at shows would find their labours considerably lightened, while the public would be immensely the gainers.—Ed.]

THE IRISH BEE-KEEPERS' ASSOCIATION.

There are now over fifty names on the list of members of the Irish Bee-Keepers' Association. Amongst those who have joined recently are the Earl of Rosse, Lords Clonbrock and Ardilaun, the Hon. Mrs. Pollok, the Hon. Richard Bellew, &c.

On the motion of the Rev. Canon Bagot, the Agricultural Committee of the Royal Dublin Society have placed one of their Committee Rooms at the New Buildings, Balls Bridge, at our disposal for our preliminary meeting, which will be held at 12 o'clock on the 21st prox. (Cattle Show week).

My very best thanks are due to the Rev. J. M. Aldridge for having sent me the names of no less than fifteen members. I have also to thank Mr. Robert Brown, of Donoghmore, and the Very Rev. M. E. Holland, O.D.C., each of whom sent me several names.

Those members who have not already paid in their subscriptions can send them to Sir Jas. W. Mackay, 234 Sackville Street, Dublin, who has consented to act as treasurer. I may mention that although five shillings is the minimum subscription, there is no limit in the other direction. Persons willing to become members should send in their names without delay to—Robert Sproule, 4 *Clonliffe Terrace E., Clonliffe Road, Dublin.*

TRANSFERRING IN FEBRUARY.

I was not at all successful in removing the bees into the new hive. I cut the combs out of the old frames, placed them in the new ones, with two corks to hold the comb to the top of the frame, and then tied it round with two tapes; this was done on February 25th. I looked at them a week after, and cut the tape off two frames; but found they had only fixed one, so I had to tie it up again. I looked again yesterday and found them just the same, only one joined. The combs have sunk, burying the corks. I don't know what to do with them. All the combs are nearly full of sealed brood and eggs. I am very sorry indeed, it was one of my best stocks. —F. S. S., *Leicestershire.*

[We do our utmost to restrain the impetuosity of amateurs, but apparently with poor success. The operation should not have been undertaken until the latter part of April at the earliest; and our friend forgot to put a strip of wood between the corks and the comb, which would have prevented the sinking of the latter.—Ed.]

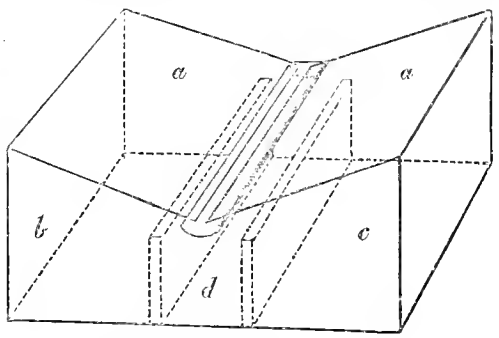
OBSERVATORY HIVES.

By way of postscript to extract from Robert Boyle's work, quoted in March *Journal*, let me add a few lines from preface to Arthur Murphy's* *The Bees, a Poem*, which poem is a translation from the Jesuit's Vanière Latin poem, *Prædium Rusticum*, book 14th. —J. Lawson Sisson.

'Maraldi, a famous French philosopher, was the first that invented glass hives, and through that transparent medium was able to observe the manners, the genius, and all the labours of those wonderful insects. He published his account in the *Histoire de l'Académie Royale des Sciences*,† on the 6th November, 1712. Vanière professes to have collected his materials from Maraldi, and has done them ample justice. Of the truth no doubt can be entertained, when we find that since that time Réaumur, another member of the Academy of Sciences at Paris, published his *History of Insects*, and in almost all particulars coincides with Maraldi.'

WINTER FEEDING.

I enclose sketch of a combined winter-feeder and moisture condenser which I have invented. I am convinced that dryness is far more important than warmth; if your hive is damp, the more covering



a. A glass, removeable, and zinc gutter.
b. Space for sugar.
c. Space for artificial pollen.
d. Entrance way.

you put on the more you confine the moisture; but if you have an efficient condenser, then cover as much as you please. The hive that has wintered best is one on which I forgot to put extra quilt, so it has been through this severe winter in a single-walled hive, in an exposed position, with only one layer of hop-sacking.—H. Parson, *The Firs, Guildford.*

WINTERING.—FOUL BROOD.

I do not quite understand what your correspondent, Mr. E. W. Lister, means when he says (*Bee Journal*, page 201) that 'a hive at any time should not contain more comb in its brood nest than the bees can cover.' What about a winter's supply of food? Can it be contained merely in the combs which the bees cover? I begin, indeed, to think that a much less supply of winter food than is usually

* Arthur Murphy was the well-known translator of *Tacitus.*

† If Colonel Pearson, who is so good a translator from the French, could give us Maraldi's paper in English, it would be a boon.

given would suffice (provided of course that a sufficient supply is given in the spring), and that thereby the space occupied by the bees might be more contracted; for it seems to me, when I open my hives at the beginning of spring, that the winter supply is very little diminished; but I have not as yet attempted in winter time to restrict the bees to merely the combs which they can cover. I may mention that I have had practical experience of the truth of your remarks in last year's *Journal* respecting foul brood. I was troubled with it last autumn; it first appeared in one hive, and then spread rapidly to all the others; but I determined to 'stamp it out,' and so, although at the loss of some brood, I turned the bees completely out, took away their honey, and fed them well with syrup. That was at the beginning of September. They have wintered well, and now seem to be in capital condition, with new clean combs, and no sign of foul brood. Whether it will appear again, I cannot of course say, but I am in great hope that it will not. I thank you heartily for the valuable information which you have given in reply to my inquiry respecting the 'Management of an Apiary.'—An Amateur.

[It is an old experience that the strongest stocks consume no more honey than weaker ones during winter, and the argument in the present case is that by carefully enclosing the weaker lots they are put upon a par with the stronger, in as much as they are enabled to retain or conserve their heat.—Ed.]

WINTERING IN FRAME-HIVES.

Last autumn I had two swarms in frame-hives, one of them very strong, the other light and doubtful. I kept them in a shed constructed for them, which faced nearly direct eastward, where I packed them over with straw (front excepted) and left them, as I thought, in good condition. About Christmas I lifted them to ascertain their condition, when I discovered very little amiss, except about a handful of dead bees fallen from between two of the combs in the stronger hive, which I cleared away, and left them until the 10th of March, when I made a second examination, and was astonished to find the light and doubtful hive lively and apparently little altered since it was put up in the autumn. Passing to the strong one with some air of confidence, which lasted but a few moments, on the bottom of the hive and between the combs were hundreds of dead bees. Further examination proved that every bee in the hive was dead, leaving behind them five or six combs with honey in, two of them nearly full. I noticed most of the honey was in the combs where the batch of dead bees had fallen from before I examined them at Christmas. These two swarms were side by side on the same bench, and all the surroundings equal.

Being entirely ignorant as to the cause of the death of the bees, and also as to what I ought to have done on seeing the batch of dead bees at Christmas, I should be very glad to be enlightened by any one being interested in wintering bees in frame-hives, as I live where practice, knowledge, and experience of, and with them, are very scarce.—Keighley.

POLLEN TAKING.

I am very far from being a Home-Ruler, still on this question I perfectly agree with your Irish friend that bees do not collect pollen with their tongue; although the tongue is the principal organ in use while collecting is going on. If you make a point of testing this, you will find that the tongue is never distended except when the bee is on the wing, and then the honey is given out on to the fore-legs for the purpose of making the dust into paste, by which means alone it is able to put it into those baskets in the hind-legs. If you carefully examine the under part of a bee, and even its legs to the first joint, there is a great quantity of hair, and it is by the use of the two fore-legs (exactly in the same way that we use our arms when collecting straw) that the flour is conveyed on to this hair; and when that is charged the bee rises on the wing, and swabs it off (with the middle pair of legs) by means of the honey scraped off the tongue, and conveys it by them (the middle legs) to the baskets on the hind-legs. As a proof of the hair, and not the tongue, being the vehicle, bees cannot collect pollen in any other form than dust, and the dryer the better; the slightest moisture creates difficulties which, were it otherwise, the tongue would overcome.

In saying this, I do not wish you to suppose I deny that the tongue is ever brought into contact with the pollen, that does frequently happen, and then the fore-legs may be seen scraping it off the tongue; but it is not the rule; and when a bee attacks a hyacinth which has been heavily laden with flour the arms (fore-legs) are used just like human beings; but you do not observe the tongue thrust into the flour only occasionally as if by accident. Apologising for such a long letter on so simple a matter.—Thos. B. Ward, *Highgate*.

[The bees that 'never use the tongue' in gathering the grains of pollen (pea-flour) are different in their habits from our bees, and from those of many others with whom we are acquainted. Our bees use the tongue continually (we have never said *exclusively*), licking the flour from the shavings, and, whisking it off with the fore-legs, transmit it to their hind ones. Want of space will not permit us to pursue the subject now; but if our readers will refer to pp. 159–60 of Vol. V. of *B. B. J.* they will find the question is not a new one.—Ed. *B. B. J.*]

BEES IN NEW ZEALAND.—FERTILISATION IN CONFINEMENT.

Would you kindly let me know through the *B. B. J.* if there is any feasible and sure way of procuring pure impregnation for queens in a country where you are surrounded by black bees in their wild state? I have tried to make out the directions given in *B. B. J.* for artificial impregnation, but am not quite sure of it; if you could I should be very glad. The second shipment of Ligurians arrived safely from San Francisco, and are doing well. I will, if possible, send you a description of the way they pack them next mail.—F. C. Parish, *Manager, Coromandel Apiary, December 31st*, 1880.

[We should be very glad to be able to tell of a way of securing the mating of queens by selected drones, but do

not know how it can be effected with certainty. Young queens appear to have an instinctive aversion to marriage with blood relations, and are wilful enough to prefer their own choice to any that may be chosen for them. None of the means by which assorted unions have been said to have been effected have proved successful except with the inventors, so we are compelled to fall back upon the principle of artificially breeding drones earlier or later in season than is natural; or of restraining the flight of the young queens and the selected drones until the afternoon, when drones at liberty will usually have taken their flight for the day, that the young queens may not be likely to meet them. This last is the 'Kohler' plan, but in situations where the sun does not shine upon the bees until late in the day, the intention is liable to be defeated, for drones from such stocks will probably then be on the wing.—Ed.]

SHILLING STEWARTONS.

In the interesting discussion on 'The Stewarton Hive,' in January number, Captain Campbell states that he makes his own Stewarton boxes for one shilling each. Would the gentleman kindly favour a working man with a little information how to do likewise, which would no doubt be a benefit to many others?—*St. Saviour's Road, St. Helier, Jersey, March 7th*, 1881.

THE STEWARTON HIVE.

In the January Number of the *Journal* I endeavoured to remove some of the misconceptions which unfortunately still appear to linger in the south as to the value and manipulation of the Stewarton hive from the discussion following on the Rev. E. Bartrum's excellent paper on the above hive read before the British Bee-keepers' Association; and I regretted to find from last month's Number so distinguished a member of that Association as Mr. Thos. Wm. Cowan reiterating the views he put forth previously, thus necessitating a fuller explanation.

Mr. Cowan now admits that the principle of contrasting the harvest of 164 super and 30 lbs. body honey obtained by me here from one colony in 1868 as against 120 lbs. super with 89 lbs. added of 'that watery deposit, crude or extracted honey, from a frame-hive in his southern apiary in presumably some other year, is, as I put it, 'no criterion as to comparative value of any hive or system.' He, however, added he, has wrought both hives and systems side by side; but, as he mentioned at the discussion, he had adopted several variations, which of course he was at full liberty to do, in working the Stewarton system, this might partly account for the abnormal state of matters induced, such as octagon supers being sealed from the centre outwards, and he may possibly feel that results contrasted in such circumstances would scarcely be 'fair,' nor yet 'instructive.'

It is now more than twenty years since I rendered the Stewarton hive moveable and interchangeable in all its parts, so far as its form would allow; and to me it does seem strange to find it described as an 'intermediate' or 'stepping-stone' from the straw skep to the moveable comb-hive. That the Stewarton is a moveable comb-hive may be best illustrated when I say I have a good stock of those hives peopled, and as good a stock in reserve against the coming season. I do not believe at the present moment a stock-box in my apiary contains a single frame or bar originally made for it, so thoroughly have their contents been interchanged, which speaks equally decidedly as to the moveable nature of the contents of the Stewarton, as well as the exactness of Stewarton workmanship.

According to Mr. Cowan, a moveable comb-hive to be worthy of the name must have all its combs exactly alike, not corresponding with the like parts of the same description of hive; but all must be reduced to one common level. Perfect equality, I am afraid, is not to be found in Nature, the body politic, nor yet in the bee-hive; it exists solely in the dreams of the theorist. A good many years ago I have a vivid recollection of a correspondence with a talented apiarian in the South, then wildly enamoured of this equality principle. The supers were to be of a uniform depth with the stock-boxes for interchange of contents. Their bars, too, must be of the orthodox seven-eighths of an inch wide. There was as great a dread of the frames touching the crown-boards as your correspondent seems to have of my close-fitting, honey dividing end boards. I argued then, as I do still, Nature against equality, or adaptation of means to an end; and am afraid I rather shocked my scientific brother, telling him the shallowness of my supers, and that their bars in common with the end ones of my stock-boxes were 1½ in. wide. I chaffed him as to what attenuated, miserable appearance honey-combs seven-eighths wide would make, that his aim ought to be as complete compartmental arrangement as possible, not one of equality. I rather suspect the value of the broad bar was never fully appreciated in the South till the rich, massive combs of the Scotch exhibits at the first Honey Show at the Crystal Palace attracted universal admiration. I am twitted with being unable to interchange the end combs for central frames; and I am proud to say the Stewarton end admits facility for no such bad practice, but those bars fit either end of each box, a fact your correspondent seems not yet to have discovered.

So far from Mr. Cowan's position, that the Stewarton is the 'stepping-stone' to the square frame-hive, in my experience the very opposite holds good. 'Contracting the space' has always appeared to me as a confession of weakness, dwindling members, retrogression, in short; the pair of dividing-boards as the crutches on which the invalid leant in hope of being restored to a measure of strength: crutches and splints are doubtless very useful aids for the weak and broken members of the apiary. When I found the Stewarton I found an essentially strong hive system, independent of all such appliances.

I grant that the queen can be more readily found between the dividing-boards or in a common frame-hive than amongst the teeming population of a many-storied Stewarton colony; the bee-keepers' great desideratum is not to find the queen, but the honey. Beyond craving an audience to satisfy myself of the safety of all my queens at the spring overhaul, and again for the deposition of the aged in autumn, I rarely disturb my honey-yielding colonies for such a purpose, and experience little trouble of finding her on the frames of the central brood-nest, from which the German idea is she passes at her peril. It is the queen of the frequently-disturbed hive which makes off, and hides in the clusters of the odd corners. It is in such inelastic hives as the common frame fixed to legs and cover, rendering the natural extension of breeding space in a downward direction impossible that the necessity existing for searching for queens, temporarily removing filling-supers or frames to cut out royal cells, and the endless manipulations consequent on trying to frustrate the swarming propensity of bees from that anomalous state of matters as a moveable comb system located within a fixed breeding space.

I dissent entirely from the theory that, 'Bees are more inclined to extend their brood-chamber laterally. Combs are at all times more rapidly both built and egged in the centre than at the sides of the cluster, the case put by your correspondent does not prove anything beyond the saving of labour to a weak stock being supplied with borrowed empty combs. Surely this idea is carried a little too far when it is remembered it takes something like three weeks to mature the first batch. 'Spreading the brood,' as I have already put it, is best left to the instincts and numbers of the nurse-bees; and

your readers would do well to ponder the excellent and timely advice given by our Editor on this point first page last month's *Journal*.

The rapidity with which strong Stewarton colonies in favourable seasons complete their supers generally renders partial deprivation unnecessary. Still, I fear, when in a strait for table use I have removed sealed end combs, on more than one occasion ere the central were completed. It is, however, new to me that our little favourites use one thickness of cell caps for Stewarton, and another for sectional supers.

It is perfectly true that a strong colony is more easily got up for the novice; and beautiful completed supers for competition obtained at the expense of combining two prime swarms. Still the supers usually more than repay the cost of bees, with an amply-found strong colony to boot for succeeding season's campaigns.

Thanks to the thoroughly moveable nature of the contents of the Renfrewshire Stewarton, I must confess it is now many years since I combined two swarms to found a new colony. These are built up from newly-combed frames, ripe brood coupled with the flying bees of outlying moved straws, on which table glasses are being filled with the assistance of the adhering young bees and fresh eggs. In the first instance, to get up royal cells, some ten days thereafter these cells are divided amongst as many additional young stocks then started as required. So soon as the honey harvest wanes early in August, these young stocks are fed up till they possess as much sealed food as will support them in affluence till the succeeding season, which has the effect of adding naturally to the youthful element, the life-blood of every colony. The population is still further augmented by the entire bees of the adjoining condemned old colony being swept from the combs into an empty Stewarton box, their queen caged. At dusk she is destroyed, the young colony sets on top, and slides drawn, when a peaceful union ensues. With an abundant supply of pollen in spring, such stocks, beyond cleaning their boards, require no further attention, and, like all well-found prosperous ones, are best left to regulate the commencement of laying and spreading the brood in keeping with their respective strengths and the wonderful instinct of the bees in forecasting the weather. Stimulating too early, and breeding checked, tell almost as disastrously on the queen and after prosperity, as the premature expansion of the fruit-blossoms does on the fruit crop.

The scientists of our hobby, to obtain uniformity of combs, attempted to solve the problem of squaring the circle, or deviating from the spherical shape of domicile most in keeping with the form bees naturally assume. The octagon is the nearest approach to the sphere in wood, and after testing it for years against the square, I found the bees in the former came out much drier and stronger in spring. Both breeding and comb-building went on faster and more uninterruptedly than in the latter, which a little reflection easily accounted for from the heat of the cluster ascending to keep the food and brood overhead warm, setting free a greater number of workers than could be spared for division ends of square. On the approach of the cold spell, they were forced to pack towards the centre, and abandon the outworks. With the telescopic expansion of all the parts of the octagon, to prevent the annoyance and loss of swarms, the trouble of coddling, and expense of feeding, and, above all, the magnificent harvests reaped with so little trouble as to induce the Rev. Mr. Bartrum to happily dub it 'the hive of the busy man,' and the present writer long ago to abandon the square for the octagon form, that form 'used with success in Scotland' 208 years ago, and down to last season, when it was recorded that a Stewarton and its swarms yielded in the Island of Arran the splendid harvest of 481 lbs.—A RENFREWSHIRE BEE-KEEPER.

STEALING AND APPROPRIATING IDEAS.

No. 1.

I observed an article in the *British Bee Journal* of March 1st, 1881, under the above heading, signed 'A Lanarkshire Bee-keeper,' the inventor of the Lanarkshire bar-frame hive; and I would advise him before trying to raise a quarrel, to come out from behind the hedge, as I do not like to see any one claiming to be a Scotchman acting in a cowardly way.

I do not wish to have a paper quarrel with the writer such as he had eighteen months ago with the Editor of the *Dumfries Standard* against Mr. Armstrong, of Maxwelton, whom the 'Lanarkshire Bee-keeper' blamed for stealing his ideas. Unity and harmony among bee-keepers will better tend to advance the cause of apiculture than following my Lanarkshire friend's example of charging every inventor with stealing his ideas. When Mr. Wilson and I got up the Dalbeattie hive, we meant it for our own use, and if it has injured 'the Lanarkshire Bee-keeper' I am very sorry for it; but if I have any of his ideas in the Dalbeattie hive I am not aware of it.

'The Lanarkshire Bee-keeper' will know that it is impossible to make a frame-hive without frames; and if mine differ from those in the Lanarkshire hive, and are more suitable for the work they are intended for, I cannot be guilty of stealing his ideas. I may also inform him that the Dalbeattie hive was in use for some time before I saw the Lanarkshire hive at Kelso, and that I have made no alterations on it since; and as for the American Eclectic, I never heard of it until I saw it mentioned in the letter in question. To save 'the Lanarkshire Bee-keeper' any more writing on the subject, if he will come to Dalbeattie I shall be very glad to see him, and will show him the Dalbeattie hive as it is; and if he can find anything in it or in any other hives in my apiary that he can claim to be of his invention, I will give him honour for it, for I wish to deal fairly with every one, and I hope to be honourably dealt with. I was greatly amused at the absurdity of training cats to catch mice. The cats in this district have sufficient instinct about them to catch mice without training; and if he wishes one of them I will send him it, and I can assure him it is neither his nor my invention.—JOHN THOMSON, 102 *High Street, Dalbeattie.*

No. 2.

Your correspondent, 'A Lanarkshire Bee-keeper,' at page 223, is, I think, very unfair in his remarks with regard to what I said in the discussion on the Stewarton hive. If he had carefully read the discussion, he would have found that I made no such claim with regard to close-fitting division-boards as his letter implies; in fact, throughout the discussion I never even once mentioned them. I certainly did not claim to have invented them. —THOS. WM. COWAN, *Compton Lea, Horsham, 18th March*, 1881.

ON THE DERIVATION OF THE ORGANIC POWERS OF THE BEE FROM SUGAR.

Reply to the Article of Mr. Cheshire in No. 94.

A bee, that has become incapable of flight, in a few minutes after partaking of sugar, runs and flies as cleverly as before. It may be concluded from this that the muscular and nervous tissues were not worn out. The muscles could not be used up for lack of nutriment, because there is still a sufficient store of albumen in the stomach. I have dissected bees after they have become incapable of flight, and others that were already dead. I could press out of the chyle-forming stomach a considerable quantity of albumen, which cohered like the white of an egg, and coagulated under heat and nitric acid. Since there was albumen enough present to restore the disabled muscle, it would not matter whether the bee could digest pollen or not. The decomposition

of muscle could continue very well without sugar, because the muscles and nerves were uninjured, and albumen enough was present in the body, and yet the bee could not fly.

It follows, therefore, that the decomposition of muscular tissue and albumen in the blood does not suffice to produce motion. The bee dies, therefore the organic activities of the bee are not effected solely by the decomposition of tissue and albumen.

The reply might be made,—Sugar restores motion because it helps to restore muscular tissue. I do not believe there is a physiologist who would assent to that, since Liebig has taught us it is albuminous matter that builds up the body.

It might be further replied,—If the bee receives no sugar, no decomposition of muscular tissue occurs, or only in a limited degree. When this objection is made, it allows that the decomposition of the forces contained in sugar are necessary to organic activity; it grants the point, which it has been my purpose to prove by experiment.

Mr. Cheshire says want of sugar causes a collapse, which makes the bee incapable of digesting pollen. Here he arrives at exactly the same conclusion that I do, namely, that the decomposition of the digestive glands and albumen do not suffice to produce pepsin, that the decomposition of muscle and albumen does not suffice to produce motion, that the decomposition of a tissue and the albumen does not suffice to produce its function, that the co-operation of another substance is necessary, that the attractions of the atoms of sugar are transmuted into organic activity.

Mr. Cheshire says, 'Pollen is an insoluble substance.' The pollen is not consumed by the bee, but the albumen in the pollen being soluble is extracted, consumed, and requires alteration in order to be taken into the economy by the absorbents.

Mr. Cheshire says, 'That the decomposition of muscular tissue is not the *sole* origin of motive power, physiologists have long proved by experiments upon the amount of urea evolved by men and animals under certain measured muscular effort, and does not, I submit, depend upon anything that Mayer has taught us in relation to the conservation of energy.'

In former times it was believed that the combination of oxygen with the tissue was the origin of the organic powers. After Mayer had published his ideas in Germany, and Joule had published his experiments in England, it was believed that the forces which were set free through the combination of oxygen with muscular tissue were the origin of motion. But experiments proved, that in activity but little or no more urea is produced than in a state of repose. Many believed now that the same powers which are set free in decomposition in a state of repose, in activity are expended on motion. Others believed that the decomposition of sugar and fat originated motion.

Fick proved now by a calculation based upon the mechanical equivalent of heat discovered by Mayer and Joule, that decomposition of muscle in a state of repose does not suffice to explain motion.

When Mr. Cheshire says, physiologists had concluded from the amount of urea evolved under a certain amount of muscular effort that the powers resulting from decomposition of muscular tissue are not the only ones producing motion, this conclusion could only be arrived at through the mechanical equivalent of heat, which is based on the theory of the conservation of energy.—Dr. Dönhoff, *Orsoy, Lower Rhine.*

Medicinal Properties of Honey.—Honey is the *greatest diluter of the blood*, but if partaken of too freely, causes a sensation akin to intoxication. A teaspoonful dissolved in a glass of sherry-wine creates a good appetite. In that fatal disease (*trichinosis*) from eating diseased pork, honey spread on brown paper, as a plaster, and applied to the chest, the *trichinæ* quit their abode, and will be found in the plaster.—James Bruce.

Echoes from the Hives.

Beaurepaire Park, Basingstoke, Hants, March 1881.—'It may interest you and your readers to know that I am still making gifts to my friends, and consuming at home honey (taken, of course, through the medium of an extractor) at the harvest of 1878. The honey in question is simply perfection, and the jars are labelled "July 15th, 1878."'—H. Welch Thornton.

Highgate, Middlesex, March 2nd, 1881.—*Re Autumn Stimulation.*—'I believe that a certain winter rest is as necessary for the queen-bee as for a plant, and if we promote undue exertions in the autumn (beyond the normal time), she will not answer with vigour to our stimulants in early spring. It is, however, a very interesting question which I am trying to solve by means of early stimulating bees which have, and which have not, been stimulated in the previous autumn.'—T. B. Ward.

Gt. Yarmouth, March 5th, 1881.—'It is my intention to start a bee-farm on a small scale as I have a large garden, and I will, at an early date, do myself the pleasure of a visit to your establishment. I am hon. secretary to the Horticultural Society here, and at our show in August next, the Suffolk Bee Association are intending to exhibit their bee-tent and system of driving.'—Sam. Barge.

Whittingham Hall, Fressingfield, near Harleston, Norfolk, 7th March, 1881.—'I am thankful to say, my stocks have all passed through this trying winter with safety, owing principally, I believe, to the quilt; now they require different management.'—S. F. Clutten.

Kingsbridge, Devon, March 8th, 1881.—*High Praise.*—'What a delightful number the last *B. B. Journal* is!—interesting and instructive. The publication not only keeps up its interest, but in every way *increases* in interest. My eighteen stocks are *tearing* at the pea-flour,—I never saw anything like it. There are *no* flowers about; even the crocuses do not open well, owing to so much wet weather, and laurustinus is killed. The pea-flour is an established fact. My hives are all in good condition—dry, healthy, and strong,—no losses this winter. I have been making some very fair drone foundation for 2-lb. section supers, thin and white, from plaster casts; but am now electrotyping a sheet of foundation selected, as the casts will not bear much work. I back up the electro with metal. My worker-sheets are quite good enough from my casts, and enough wax from my bees for my purpose. I expect we shall have a *good* season, and I never, since 1841, took such delight in my bees as now. Thanks, again and again, for your *B. B. Journal*,—it is the *making* of us apiarians.'—George Fox.

Monifieth, March 12th.—Early Queen Cells.—'I have been looking over six hives this afternoon, and I found brood in them all, and I took out six queen-cells from one hive. I was afraid the old queen was dead, but I found her all right. I was astonished to see so many queen-cells at this season, after such a winter, but it is a fact.'—G. C.

New Court, Ross, March 15, 1881.—*Queens leaving the Hives in March.*—'Last Friday being very warm here, my bees were out pretty strongly. One hive being weak, I protected from robbers with a piece of perforated zinc, leaving only a small entrance. On going to look at them in the afternoon, I found the bees of this stock running about on the alighting-board, and thought at first that they were on the look-out for robbers; but on looking on the ground I found a small bunch of bees, and on examining them, found the queen perfectly well and lively on the ground. Why she should have come out of the hive I cannot imagine, for when I put her back again the bees received her with great demonstrations of joy, and she has stayed at home since. She is a fine black queen of last year, and is laying. I shall be greatly

obliged for any information on this matter in the next *Journal*.—W. S. Clarke.

[It is difficult to assign a 'reason' for what seems more like a freak than as having occurred through assignable cause. Queens occasionally make mistakes, as did the unfortunate swallow that came over too early, and did '*not* make a summer.'—Ed.]

Cranbrook, March 17th, 1881.—'My bees have wintered very well indeed; they have consumed very little food. I packed them (five frames of sealed store covered with bees) with chaff at sides and at top, and put stops at the frame ends, and when I opened them the other day, I found nearly half their food still left; I unsealed some of the cells and substituted for the fullest comb without any brood, an empty one; there is now brood in all stages, and some bees hatched out. I shall now gently feed them till the flowers are well out; they work pea-flour well.'—E. J. Holmes.

Sevenoaks.—'I thought of making up nine stocks for the winter, but under the instructions of the *British Bee Journal* I have managed to save thirteen stocks, by making use of driven bees from my neighbours, who don't do any of the new-fangled tricks, as they call 'driving.' Bad as the season has been, the bees are all out working (March 5). It is rather mild, but damp and foggy. I saw in the *Journal* that Mr. Cheshire stated that a hive would give a profit of 5*l*. I only took notice (novice-like) of one of my boxes last year, and on the 7th of July I took off one super, weighing 20lbs. (in sections), and I also took off 10 lbs. more afterwards, which I had no trouble in selling at 1*s*. 6*d*. per lb., and I had one good swarm, value 15*s*., besides a cast. I think I am doing well, considering the short time I have started in this business.'—G. Sands.

Weston, Leamington.—Wintering.—Dry Sugar for Bees.—'During the last week in February, finding two stocks of bees starved, I looked over the whole of my sixty stocks. I found two others that had lost half their bees, the queens being all right; and another that had lost its queen and half the bees; the rest are in fair condition. The stock I drove last autumn, and gave four combs and just a little syrup, and a large lump of loaf sugar on top of the frames, are in good condition; and thinking that perhaps the sugar was thrown on the floor-board, I lifted them off and found just a few chibblings of what appeared to be comb or cappings, and one dead bee only. The bees had entirely eaten through the centre of the sugar, but had not consumed I should think more than two-thirds of the whole. I feel satisfied that if those two stocks that were starved had had about 2 lbs. each of dry loaf sugar on the top of their frames, they would not have been lost.'—A Warwickshire Bee-Keeper.

Liverpool.—'I have seven stocks in bar-frames, but have not examined them since winter. I should like to work out your idea about contracting the brood-nest, for that must be the reason of the lateness in swarming from frame-hives.'—John M. Sadler.

Blair Athol.—'The severest of winters is about ended. The bees are in splendid condition, and prospects bright—if we can but get bright weather.'—A. C.

Fonthill.—'Have overhauled my hives and find them on the whole in wonderful condition. The bees simply swarm to the artificial pollen this year.'—A. G. R.

Sturminster, Newton.—'The people that I am living with have been bee-keepers on a large scale; but their bees are all dead now, and they are surprised to find mine are all alive, which is the result of feeding and hints from your paper.'—C. C. C.

Association for Cheltenham and District.—'I should like to start a Bee-keepers' Association in this neighbourhood, if I could get some others to join me, but there does not seem to be any one else who takes an interest in bees about here.'—Thomas Baker, *Farncote, Wristcombe, Cheltenham*.

Queries and Replies.

Query No. 379.—Wishing to make my stocks of bees strong and not increase their number, should I do rightly with a middle of May swarm, when the nights may be still cold, to drive out all the bees with the swarm, removing one queen, hive them and place them back on the old stand from which they swarmed? Then I propose to take the eight frames, with comb denuded of bees, with queen-cells removed and join to another eight in one of your Combination hives, giving the bees thus sixteen combs of brood, &c., to keep warm and tend; are these too many? Would you advise the foreign frames to be placed at the back of those already in the hive, or alternately with them, or only in the centre? Also, should the swarm and rest of the bees, when hived, be supered at once, as they will be very numerous?—K. C. J.

Reply to Query No. 379.—The queen of the swarm must on no account be removed, or, the bees having no means of raising another, will come to grief. Otherwise the plan proposed will most probable prevent increase of stock. We question if the great increase of the brood-nest in No. 2 stock will not tend to retard the filling of supers, and cause the honey to be deposited in the combs on the ground-floor. The nights being admittedly cold, we would carefully place all the brood-combs together in No. 2 hive, that the bees may find no difficulty in doing their doubled duty and keeping the brood warm. It will, therefore, be wiser to super 'at once.'—Ed.

Query No. 380.—*The Stewarton Hive*.—I have a strong stock of bees in a Stewarton hive of three divisions. At the right time, after drawing all the slides, can I make an artificial swarm by drumming the sides? or should I succeed better by taking the two top divisions away and placing them on a new stand?—R. H.

Reply to Query No. 380.—Either of the proposed plans will answer the purpose, but the very best way will be to catch the queen, put her into a new hive fitted with comb foundation, and place it upon the stand of the present stock (when the time comes), when the bees, such as would form a natural swarm, will go to it and form the artificial one.—Ed.

NOTICES TO CORRESPONDENTS & INQUIRERS.

Stratford-on-Avon.—*Preventing after-swarms*.—Cutting out the queen-cells, less one, a week after a first swarm has issued, will generally prevent after-swarming; but if a swarm should issue after such treatment, it should be returned to the hive in the evening.

Surplus Honey.—If in sectional supers, there should be no difficulty in selling it to neighbouring grocers for them to retail it to the public, but run honey is too often, and with reason, looked upon with suspicion. Mr. Baldwin, the Association expert, has been appointed agent for the sale of honey, the property of members. —*See* letter in *Journal* of March last, also refer to 'Honey Market,' p. 140 of present vol. of *Journal*.

J. A.—*Weak Hive*.—It may be too weak to be worth joining, and it will be useless to raise a queen in it, unless there are drones at the time, which you will know better than we.

J. Fitz H., *Dorset*.—*Duplication of Eggs*.—It is unusual for queens to put two eggs in single cells, and that is all that need be said of it; but fertile workers often deposit as many as twenty in a cell.

Vacancy on the B. B. K. A. Committee.—We are sorry to announce that Mr. Edmund Wheller, of The Waldrons, Croydon, one of the newly-elected members of the above Committee, will shortly be leaving England for China. He wishes us to convey to all friends his regret on leaving them, and to express his

sorrow for the trouble they took to elect him to the Committee. Mr. Wheeler is so active and energetic a bee-keeper, that we have every confidence he will carry the bee-keeping 'mania' with him to the celestial land of his adoption.

Bee-keepers' Almanac. — *Barley-sugar.* — Captain Martin wishes us to correct an error in the recipe given for making the above; for 'half-a-pint' of vinegar, please read, *half a wineglass-full,* and proceed as directed.

Cheshire Entrances.—This device is not applicable to hives whose entrances are sunk into (or cut out of) the floor-board. They will doubtless answer their intended purpose as light-excluders, but in cases of robbing we should prefer the perforated zinc tube described on first page of March number of *Journal.* Crooked and tunnelled entrances are liable to become choked with dead or struggling bees, as many have found to their cost.

Cheap Pine.—*Lyon Hives, Northumbria.*—Mr. Lyon is entirely wrong in his quotation for best pine. Instead of 4*s.* for a 12 feet 3 × 11 plank of first (or best) quality, the charge will be 11*s.* First quality pine should contain neither knots nor shakes, and it should be straight-grained, as described by Mr. Lyon. That which differs in these respects in only moderate degree, is called 'seconds,' and anything worse is called 'thirds;' and it is this last named that is sold by timber merchants at 4*s.* per plank, 12 feet 3 × 11. For bee-hive making, the pine at 4*s.* per plank will be found very useful, but the purchaser must not expect to be able to make actual use of more than one half of it; he must cut and contrive to avoid the knots and shakes, but unless very fortunate, half the plank will be left for firewood, though, even then, it will be far cheaper than the 'high-priced,' which is not always what is promised.

T. Baker, *Cheltenham.—Best Hive for Cottager.*—Should be a frame-hive. Mr. Lyon's paper describes a cheap one if he be able to make it, or our leaflet on Starting with Bees shows how to obtain a box and frames which may be added to. If all must be purchased, the catalogues of traders should be obtained, and one at a price suitable selected. A prize was given for a very cheap hive for cottagers, at the last Dairy Show, but we are not able to give an account of it, not having seen it.

Clarifying Wax.—We know of no better means than remelting and throwing it into cold water, where it will part with the dirt and float on top; but it will be no easy task to turn 'dirty brown wax' to 'bright yellow.' Can any of our readers give any help?

Witton Gilbert.—It is as easy to put dividers between the sections at back of brood nest, as on top. Excluders would be certain to prevent the queens getting to the super, or to the sections in rear. Foundations should hang clear of frame ends, and about ¾ inch from the bottom bar. Cutting down the cell-walls of old comb, whether on wood or all wax, will cause the bees to build anew; but if you clean off all the wax from the wooden, and simply give it a new coat without its being properly impressed, it will be a failure. We cannot tell you the cost of a mould; our machine cost about 9*l.* Hives made on our Combination or Irish principle, offer special facilities for the removal of frames, the back of the brood-nest being removable, giving opportunity for parting the frames at any point and withdrawing them. The quilt should always be used, except when supers are on the hive.

Hives rich in Autumn, would naturally have kept up their breeding at that time, and would go into winter quarters with plenty of young bees, which will account for their being in good order in the spring.

Covers for binding Volumes of the *British Bee Journal* may be had from our office, Southall, Middlesex, price one shilling, postage 2½*d.* The Index to Volume VIII. will be found in the April number.

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